DISTRIBUTION AGE

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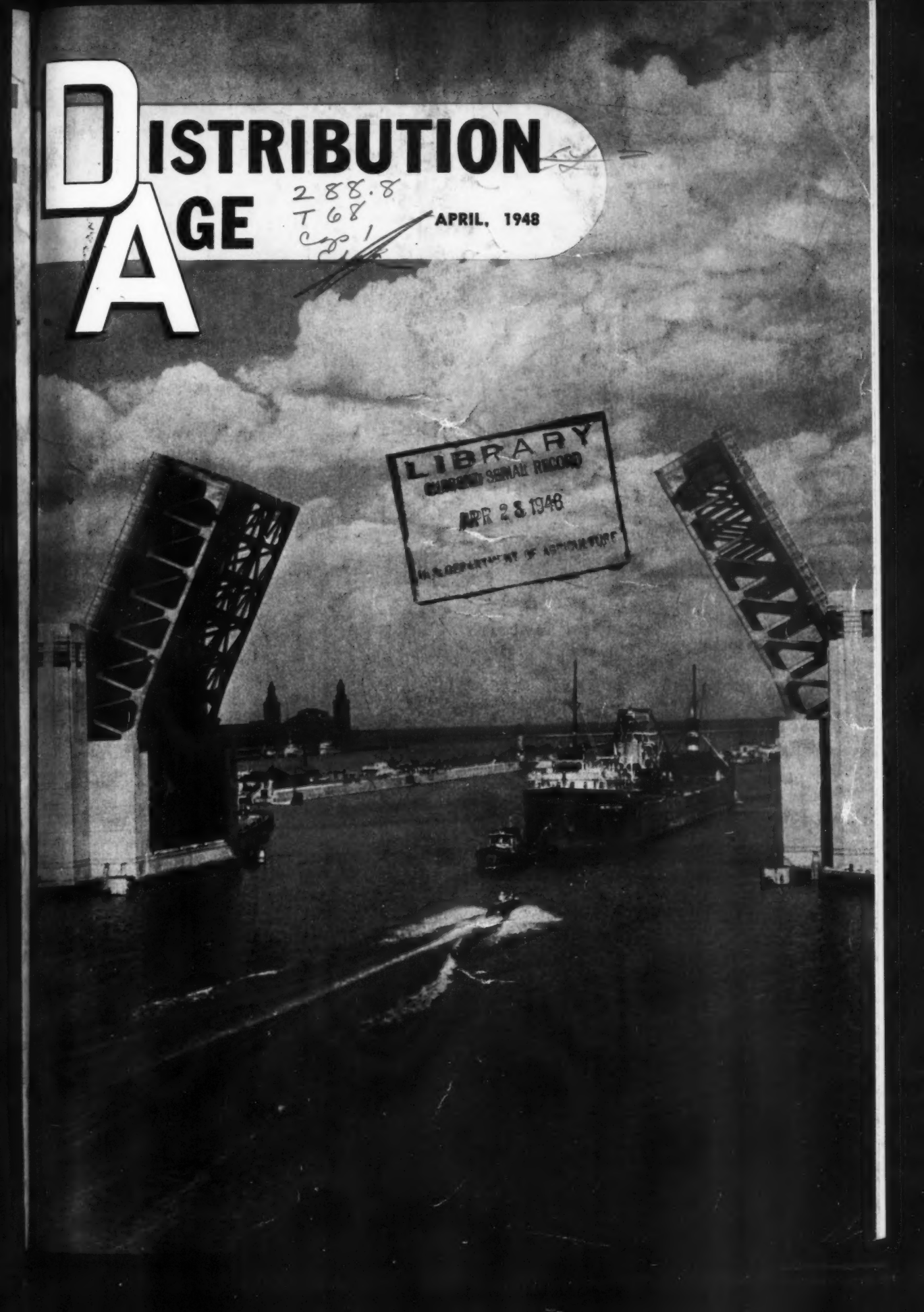

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You Need MH* to SAVE TIME!

*M H is MASS HANDLING — the systematic movement of the most units, in the shortest time, at the lowest cost.

FREE. Send for your copy of the "Towmotor Materials Handling Analysis Guide"—it shows you how to analyze and improve handling operations in your plant.

TOWMOTOR CORPORATION, DIVISION 19, 1226 EAST 152ND STREET, CLEVELAND 10, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

TOWMOTOR

THE ONE-MAN-GANG

Fork Lift Trucks *and* Tractors

WHY BUILD A NEW PLANT when you can modernize your present handling methods and streamline production operations with Towmotor Mass Handling? Towmotor Fork Lift Trucks, Tractors and Accessories will insure the most efficient use of present production equipment, manpower and space. Learn *now* how a versatile Towmotor can save time by speeding up handling operations in your plant.

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

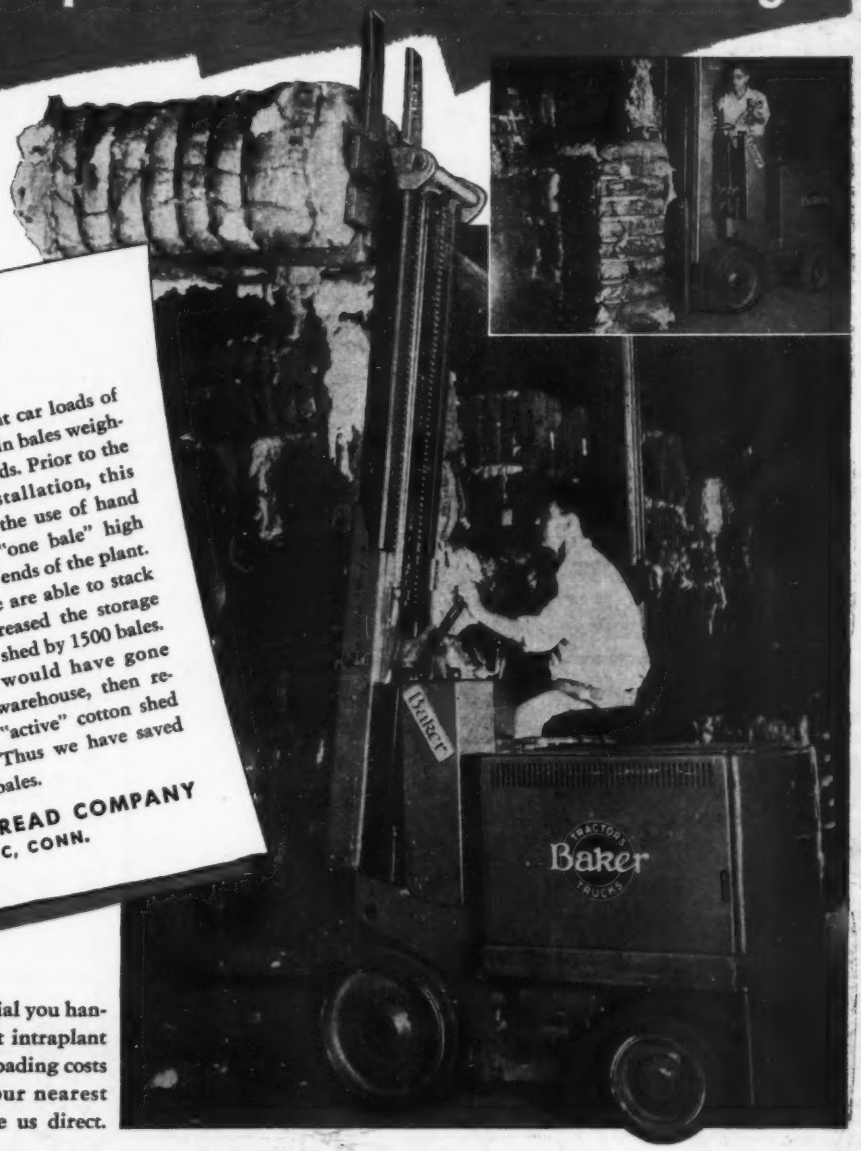
Handling Bales with BAKER TRUCK proves more profitable than "manhandling"

✱ *Excerpt of letter from The American Thread Company*

TRADE MARK

✱ At our Willimantic plant car loads of raw cotton are received in bales weighing from 450-750 pounds. Prior to the Baker Fork Truck installation, this cotton was all man handled by the use of hand trucks, and cotton was stored "one bale" high on end, in two sheds at opposite ends of the plant. With the Baker Fork Truck we are able to stack bales six high which has increased the storage capacity of our "active" cotton shed by 1500 bales. Normally these 1500 bales would have gone initially into our concrete warehouse, then re-handled and moved to the "active" cotton shed before going into process. Thus we have saved double handling on 1500 bales.

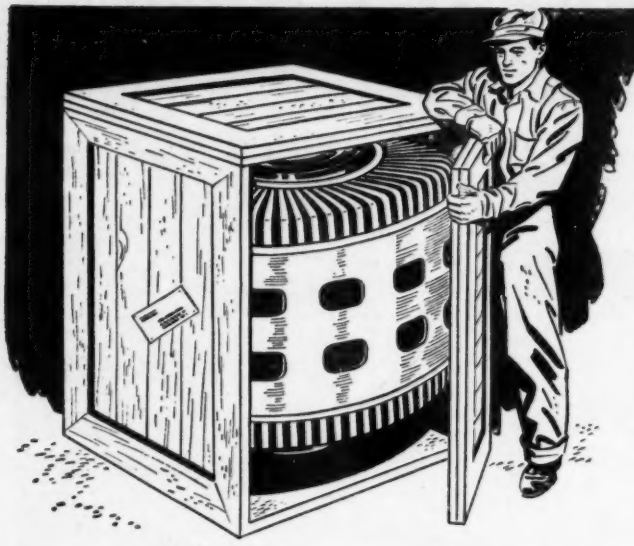
THE AMERICAN THREAD COMPANY
WILLIMANTIC, CONN.



No matter what type of material you handle in your plant, you can cut intraplant transportation, storage or carloading costs with Baker Trucks. Call your nearest Baker representative or write us direct.

BAKER INDUSTRIAL TRUCK DIVISION *of the Baker-Raulang Company*
2176 WEST 25TH STREET • CLEVELAND, OHIO
In Canada: Railway and Power Engineering Corporation, Ltd.

ALONG THE WAY...OF *TWA*

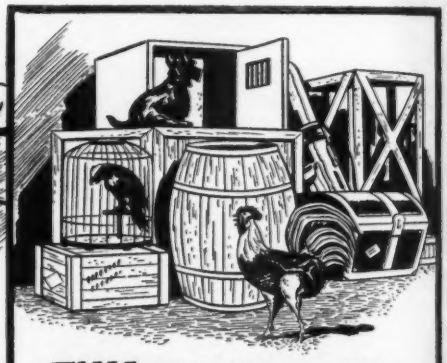


HALF-TON TURBINE TAKES 16,000-MILE HOP

WHEN A 1,000-POUND TURBINE FAILURE CRIPPLED A POWER PLANT SERVING DHAHRAN AND SURROUNDING SAUDI ARABIAN TERRITORY, OFFICIALS PONDERED THE PROBLEM OF REPAIRS IN A HURRY. DESPITE DISTANCE, IT WAS DECIDED TO SHIP THE MACHINE HALF AROUND THE WORLD TO THE PHILADELPHIA MANUFACTURER WHO BUILT IT. A RACE WITH TIME...SO **TWA** WAS CALLED. DETAILS PROMPTLY HANDLED, THE HUGE TURBINE "**FLEW**" THE 16,000-MILE ROUND TRIP VIA AIR CARGO...WAS BACK ON THE JOB IN A MATTER OF DAYS.

START THIS WAY TO SHIP **TWA**

REACH FOR YOUR PHONE. THERE'S A **TWA** AIR CARGO OFFICE NEARBY ...READY TO ANSWER QUESTIONS... EXPEDITE YOUR SHIPMENT. LOOK UP THE NUMBER NOW. KEEP IT HANDY.

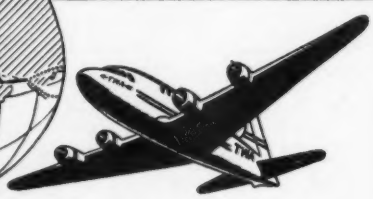


TWA AIR CARGO CAN BE ALMOST ANYTHING

WHETHER YOU HAVE AN EMERGENCY SHIPMENT, PERISHABLE, OR TYPICAL "**RUSH ORDER**"...GOODS SENT VIA **TWA** AIR CARGO TRAVEL FAST AND AT LOW COST.

KEEPER OF THE KEYS

A FLYING CARGO AGENT TRAVELS ABOARD ALL **TWA** INTERNATIONAL CARGO FLIGHTS. HE KEEPS AN EYE ON VALUABLES. AND FOR MAXIMUM PROTECTION...GOLD, SILVER, PLATINUM, GEMS AND JEWELS ARE CARRIED UNDER LOCK AND KEY IN A TON-SIZE "**STRONG BOX**" BUILT RIGHT INTO THE FUSELAGE.



ALL-CARGO . . . AIR-CARGO —A TWA FIRST

Big all-cargo planes first flew TWA routes during the war. For over a year, now, regularly scheduled flights rush TWA Air Cargo direct to destinations east or west.

TWA

TRANS WORLD AIRLINE

U.S.A. · EUROPE · AFRICA · ASIA

"HIGH" WAY TO WORLD MARKETS

TWA Air Cargo travels above the clouds...the "high" way to Europe, Africa, Asia. Call TWA today. Frequent flights... low rates. If you are shipping overseas, any international freight forwarder can also give you complete information.

Water transportation, the theme of this month's cover, is one of the essential links in the distribution chain and one that long has played a vital role in our national economy . . . the laden cargo ship is a symbol of coordination in distribution since the raw materials or products in her hold must, of necessity, have passed through all distributive phases . . . Our photograph by Ewing Galloway shows the new Shore Line Drive bridge, which spans the Chicago River, lifted to permit the entry of a steamer.

DISTRIBUTION AGE

The Magazine That Integrates All Phases Of Distribution

100 E. 42nd St., New York 17

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Publisher

D. J. WITHERSPOON
Editor

GEORGE POST
Assistant Manager

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Owned and Published by
CHILTON COMPANY
(Incorporated)

Executive Offices: Chestnut & 56th Sts., Philadelphia 39, Pa.

Editorial & Advertising Offices: 100 East 42nd St., New York 17, N. Y. Telephone, MUrray Hill 5-8600.

Officers & Directors: President, Jos. S. Hildreth; Vice Presidents, Everit B. Terhune, P. M. Fahrendorf, Julian Chase, Thomas L. Kane, G. C. Busby, Charles J. Heale; Treasurer, William H. Vallar; Secretary, John Blair Moffett; Harry V. Duffy, T. W. Lippert, Fred V. Cole. Asst. Treas., George Maiswinkle.

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Subscription Rates: U.S., $5.00 per year; Canada, $6.50 per year; Foreign Countries, $6.00 per year. Single Copies, 50c each.

Acceptance under the Act of June 5, 1934 at Harrisburg, Pennsylvania, authorized May 23, 1946

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STATEMENT OF POLICY . . . Our policy is based on the premise that distribution embraces all activities incident to the movement of goods in commerce. If distribution is to be made more efficient and economical, we believe business management must consider more than sales, because more than sales are involved. Marketing, while vital, is one phase only of distribution; seven other practical activities not only are necessary but condition marketing costs. Most commodities require handling, packing, transportation, warehousing, financing, insurance, and service and maintenance of one kind or another before, during or after marketing. We regard all of those activities as essential parts of distribution. Hence, the policy of DISTRIBUTION AGE is to give its readers sound ideas and factual information on methods and practices that will help them to improve and simplify their operations and to standardize and reduce their costs in all phases of distribution.

Select "Bayway"—strategically located on New York Harbor, within 30 minutes of Manhattan—as your operational point in Greater New York. Here you will find 1,070,000 sq. ft. of modern storage and manufacturing space . . . the varied services and facilities which expedite delivery to all points of this vast market.

"Bayway" provides these further facilities and advantages:

- **Protected open-storage space with railroad siding and 10-ton mobile crane**
- **Sprinklered buildings—low insurance rates**
- **Competent personnel—modern equipment**
- **1,000 feet of deep-water berthage**
- **Lighterage service**
- **Excellent rail-connections (on line of Central Railroad of New Jersey)**
- **Liberal storage-in-transit privileges**
- **Direct delivery to-or-from railroad car, truck, or lighter**
- **High-pressure steam for manufacturing or processing**
- **Huge, modern, vacuum fumigation plant. (Products requiring fumigation can be fumigated under Government supervision and stored at same location. No unnecessary handling hazards are incurred.)**

Write today for full information concerning the diversified distributional advantages which "Bayway" offers you.

BAYWAY
Terminal Corporation
ELIZABETH 2, NEW JERSEY
ELIZABETH 2-4450
New York Office: 60 Beaver St., New York 4, N. Y.
BOWLING GREEN 9-4460

How An Amazing Free Survey

ADDED $3,346.14 TO OUR BANK BALANCE EVERY MONTH!

If I hadn't seen it with my own eyes, I wouldn't have believed it possible. But there it was in black and white—right in our bank balance—$3,346.14 saved every month for a year's total of $40,153.68.

How, and what did we save it on? The answer is simply switching from manual handling of materials to mechanized handling with Automatic's famed TRANS-TRIPLETS—those mighty midgets of electric power, Automatic's TRANSPORTERS, TRANSTACKERS and TRANSTRACTORS!

An ATCO Specialist put us wise to this saving—made a free survey of our material handling costs. And then, in a little survey booklet like you see pictured above, he showed us with facts and figures how we could LIFT AND MOVE, TOW, and EVEN STACK our materials by the simple PUSH OF A BUTTON—the forward, reverse and lifting buttons of Automatic's famed motorized hand trucks!

Savings estimated—as against manual handling of our materials, seemed spectacular. But they were **in line**—BECAUSE OUR FIRST YEAR'S SAVINGS TOTALLED $40,153.68.

Our workers have gained new found freedom from lifting and hand-moving and stacking 2,000 to 6,000 pound loads. Labor is released for more productive work—and we at last have licked the problem of high material handling overhead.

It costs you nothing to let an ATCO specialist make a survey of YOUR handling costs. Sending the coupon may earn you similar savings. Won't you mail it?

Transporter
A PRODUCT OF AUTOMATIC
Lightens LIFE'S LOADS

AUTOMATIC TRANSPORTATION COMPANY
DIV. OF THE YALE & TOWNE MFG. CO.
115 West 87th Street, Dept. D-8, Chicago 20, Ill.

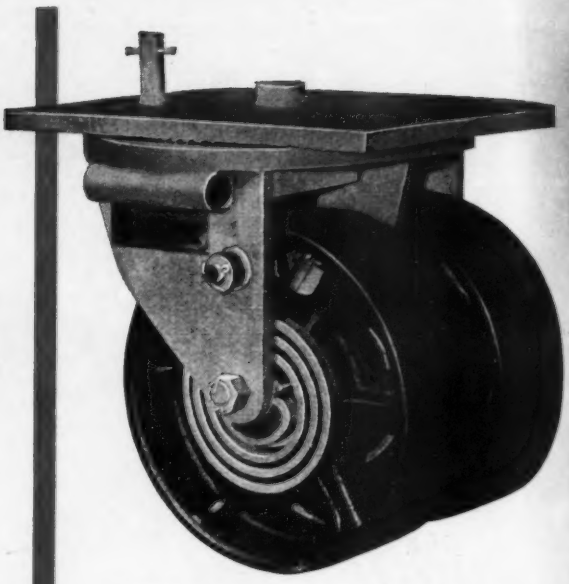
Send me complete facts on how I can cut my material handling costs with Automatic's TRANS-TRIPLETS line of motorized hand trucks.
( ) Have an ATCO Specialist make a free survey of my material handling costs.
( ) Schedule me for showing "TRANSPORTER NEWSREEL."

Company Name.....
By.....*Position*.....
Street Address.....
City.....*Zone*.....*State*.....

MANUFACTURERS OF THE FAMOUS TRANSPORTERS, TRANSTACKERS AND SKYLIFT ELECTRIC TRUCKS

Bassick Casters

wheels and wheel mountings



18" Double Wheel Floating-Hub Giant
Weight, 675 lbs.

"Diamond-Arrow"

"Little Giant"

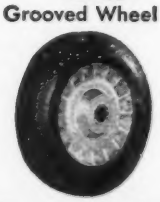
"Silent Steel"

Trailer

Pipe Socket

Grooved Wheel

The "Airliner"



"Pseumatic" Wheel

A size and type for every materials handling problem

The casters illustrated are only a few of the many types designed to fill your needs. For all types of casters and wheels, or engineering help with special materials handling problems, write to caster headquarters: THE BASSICK COMPANY, Bridgeport 2, Conn. Division of Stewart-Warner Corporation. *Canadian Division:* Stewart-Warner-Alemite Corporation, Ltd., Belleville, Ont.

Making more kinds of Casters... Making Casters do more

Bassick

Delta's newest air freight route TO AND THROUGH THE South!

Here is a new Delta Air Freight route, down through the South to New Orleans. Now you can ship direct to New Orleans via Delta from Chicago, Cincinnati, Knoxville, Chattanooga, Atlanta, Birmingham and intermediate points.

This new route is the first one-carrier air service between Cincinnati and New Orleans. From all Delta points, you have excellent connections in New Orleans with Latin-American flights. To New Orleans, your shipments connect with Delta at Chicago, Cincinnati, Knoxville and Dallas-Fort Worth.

You get same-day or overnight delivery via Delta. Compare these rates and time with surface speed and costs.

Per 100 pounds to New Orleans from:		Flight Time
Cincinnati . .	$8.00	5:30 Hours
Chicago . . .	8.95	8:10 "
Knoxville . .	6.05	4:14 "
Chattanooga .	5.05	5:19 "
Atlanta . . .	5.05	2:43 "
Birmingham .	4.05	1:40 "

Delta operates both DC-4 and DC-3 Deltaliners, with a cargo capacity up to 7,000 pounds on each DC-4. Delta also operates special all-cargo "Flying Freighters" between Chicago-Cincinnati-Atlanta and between Fort Worth-Atlanta.

Anywhere on Delta, pick-up and delivery is available if you want it. And from anywhere in the nation, you can save days and dollars by shipping to and through the South via Delta.

General Offices: Atlanta, Ga.

Ask your nearest Delta office for a copy of point-to-point rates and flight schedules. Or write to Air Freight Department, Delta Air Lines, Atlanta, Georgia.

UNION PACIFIC

The Governor of Idaho *invites You*

STATE OF IDAHO
OFFICE OF THE GOVERNOR
BOISE

C. A. ROBINS
GOVERNOR

To American Industry:

Idaho is a state of vast undeveloped resources but nevertheless ranks high as a producer in agriculture, mine and forest. Unlimited opportunities for industrial expansion through the processing of these products exist in widely scattered parts of the state. Population shifts to westward serve to emphasize the desirability of this sort of development in Idaho where water, power, location and transportation combine to afford the finest of opportunities.

Expanding reclamation activities, a marvelous climate and an energetic and progressive citizenry enhance the value of these opportunities. Come to Idaho, Gem of the Mountains!

C. A. Robins
Governor

C. A. Robins

* One of a series of advertisements based on industrial opportunities in the states served by Union Pacific Railroad.

Unite with Union Pacific in selecting sites and seeking new markets in California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, Oregon, Utah, Washington, Wyoming.

*Address Industrial Department, Union Pacific Railroad
Omaha 2, Nebraska

UNION PACIFIC RAILROAD

Road of the Daily Streamliners

MACK *Dimensional Control*

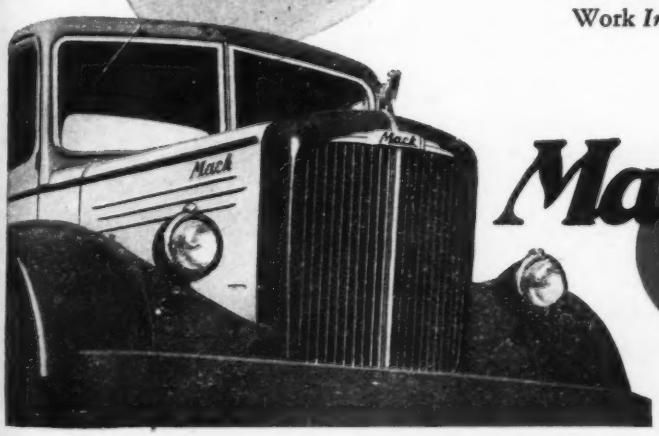
what is it?

how does it benefit a truck operator?

Simply described, Mack Dimensional Control is the planning and fabricating of every part in a Mack truck for perfect fit and uniform interchange. It calls for uncompromising adherence to exact clearances and rigid tolerances without equal in the truck industry.

How does Dimensional Control benefit you as a truck operator? It gives you trucks that are truly precision-engineered . . . trucks whose parts fit and work together in perfect co-ordination. It explains why you get uniformly thrifty performance and enduring reliability from every Mack truck you operate. And it saves you time and money on repairs because it makes possible easy re-assembly without need for prefitting of parts.

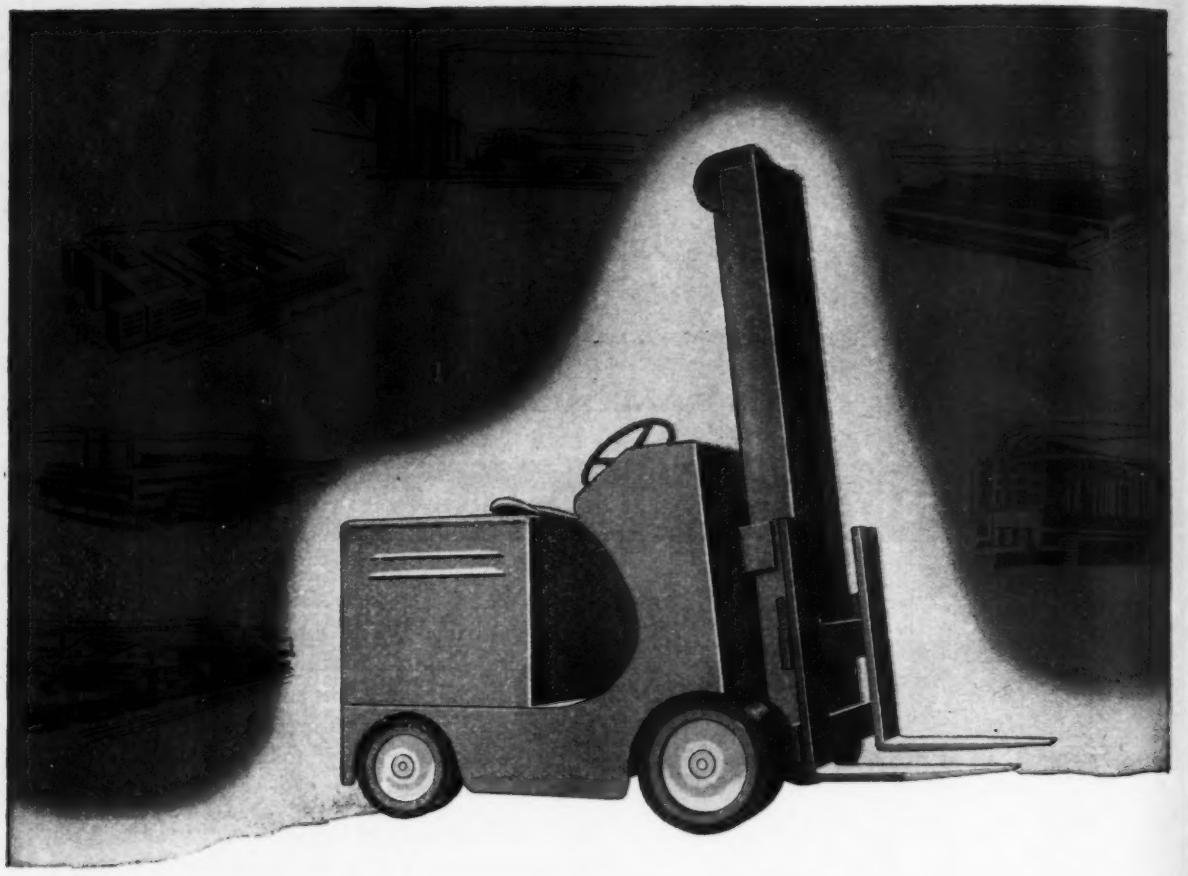
Mack Dimensional Control is one more example of the thorough planning and advanced thinking that goes into every Mack truck. It all adds up to this: You Get More Work *Out* of a Mack Truck — Because We Put More Work *Into* a Mack.



Mack

trucks for every purpose

Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.



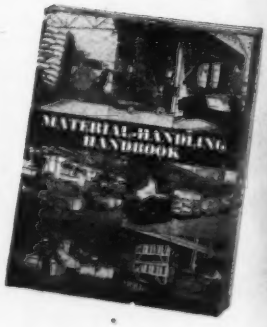
America's top industries prefer Battery Powered trucks

ELECTRIC industrial trucks predominate in the service of top-flight industries—according to all known surveys.

Behind this "popularity" vote is the hard fact that when *all* costs of truck ownership and operation are added up, *electric* industrial trucks show the *lowest cost per ton handled*. Actually, lowest-cost-per-ton-handled is only one reason for experienced users' preference. The basic simplicity and sturdiness of electric trucks also make them the *most dependable*—the best assurance against costly delays in material flow.

Cost-conscious users—in large and small industries—agree that these savings—in cost of work done, in dependability—far outweigh price-tag "savings."

The MATERIAL-HANDLING HANDBOOK has helped many organizations to plan material-handling savings that go straight to profits. Your letter will bring it, free.



THE ELECTRIC INDUSTRIAL TRUCK ASSOCIATION
29-28D Forty-first Avenue · Queens Plaza · Long Island City 1, N. Y.

1947

ADT

The continuous high ratio of immunity from fire and burglary losses in ADT-protected properties throughout the years is proof of the outstanding effectiveness of ADT Central Station Electric Protection Services

PERFORMANCE

BURGLAR AND HOLDUP ALARM SERVICES

Attacks on ADT Protection	1,819
Entrances effected	1,020
Captures as result of burglar alarms	592
Captures resulting from holdup alarms and other emergency signals	93
Insurable values of properties protected	$1,992,275,000*
Ratio of losses in attacks on ADT Protection to insurable values protected	1/100th of 1%
Immunity from burglary loss	$99\frac{99}{100}\%$

$99\frac{99}{100}\%$

AVERAGE BURGLARY LOSS IMMUNITY DURING LAST TEN YEARS

WATCHMAN'S REPORTING AND MANUAL FIRE ALARM SERVICE

Investigations of failures of watchmen to signal Central Stations on schedule	226,508
Total number of signals recorded	354,318,888
Watchmen's patrol efficiency	99 94/100ths %
Fire alarms from Manual Boxes	1,656
Insurable values of properties protected	$14,976,846,000
Ratio of fire losses to insurable values protected	6/100ths of 1%
Fire loss immunity in 1947	$99\frac{94}{100}\%$

$99\frac{96}{100}\%$

AVERAGE FIRE LOSS IMMUNITY DURING THE LAST TEN YEARS

SPRINKLER SUPERVISORY AND WATERFLOW ALARM SERVICE

Supervisory alarms of impairments of sprinkler systems	179,866
Waterflow alarms of fires or serious leaks	3,097
Manual fire alarms	151
Insurable values of properties protected	$7,574,165,000
Ratio of fire and water losses to insurable values protected	3/100ths of 1%
Fire loss immunity in 1947	$99\frac{97}{100}\%$

$99\frac{97}{100}\%$

AVERAGE FIRE LOSS IMMUNITY DURING THE LAST TEN YEARS

Year after year the ADT performance records consistently and forcefully demonstrate the importance of continuous supervision, periodic inspections and tests, and complete maintenance of protective signaling systems. Such specialized attention is your assurance of continually dependable operation.

*Exclusive of banks, U. S. Treasury, Mints and Bullion Depositories

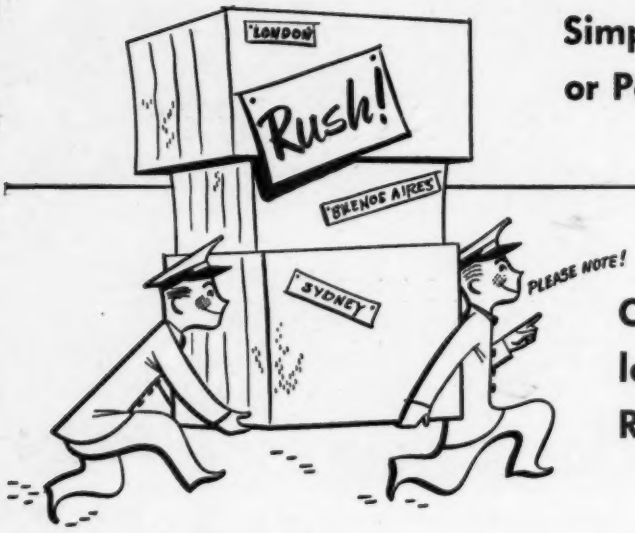
Controlled Companies of **AMERICAN DISTRICT TELEGRAPH CO.**
155 Sixth Avenue, New York 13, N. Y.
CENTRAL STATIONS IN ALL PRINCIPAL CITIES OF THE UNITED STATES

ADT

Electric Protection Services
AGAINST FIRE · BURGLARY · HOLDUP
A NATION-WIDE ORGANIZATION

Now DIRECT PERSONALIZED SERVICE ON

Clipper Cargo



Simply call your shipping agent or Pan American "Clipper Cargo"

Clipper Cargo is no longer handled by Railway Express Agency

Pan American World Airways has appointed over 150 shipping agents throughout the United States as Clipper Cargo agents. Your own shipping agent is in all probability one of these.

Clipper Cargo agents are equipped to prepare your export documents . . . to issue Pan American Airway Bills . . . to offer pick-up and trucking services . . . to advise you regarding overseas rates . . . to discuss with you in complete detail all questions regarding international air shipments . . . *and* to give you special *personalized* service.

To further facilitate your Clipper Cargo shipments, Pan American has worked out arrangements with 11 domestic carriers of air freight. They will pick up your export shipments and fly them to Pan American gateway cities, whence they will be sped to their overseas destination by Flying Clipper.

For complete information on all of these new Clippe Cargo services, call any of the Pan American offices listed below, left.

Baltimore: Lexington 5343
Boston: Liberty 3720
Chicago: Dearborn 4900
Cleveland: Superior 1848
Detroit: Randolph 9435
Houston: Beacon 3-9331
Los Angeles: Michigan 2121
Miami: Miami 3-7383
New Orleans: Canal 6391
New York: Murray Hill 6-7100
Philadelphia: Kingsley 5-5100
Portland, Ore.: Broadway 1590
San Francisco: Garfield 1-3075
Seattle: Seneca 2121
St. Louis: Central 4426
Washington, D. C.: Republic 5700

PAA CLIPPER CARGO

PAN AMERICAN WORLD AIRWAYS

"Make Mine THE NEW GMC"

•"It's the Easiest Driving, Smoothest Riding, Best Looking Job on the Road"

Men who drive trucks and *know* trucks are saying "Make mine the new GMC" because of the extra comfort and convenience, stamina and safety, new light and heavy duty GMCs provide. New cabs are larger and roomier than ever before. They have wider, deeper seats . . . higher, broader windshields and windows . . . a unique new fresh air circulation system . . . dome light, package compartment, ash tray, dual windshield wipers, provision for radio. Chassis are stronger and sturdier . . . engines are of powerful, dependable "Army Workhorse" design. More than ever GMC, The Truck of Value, is the favorite of truck operators.

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

New, tubular frame, adjustable seats give 8" more seating width . . . have 73 individually wrapped springs.

New, built-in ventilation system draws in fresh air, forces out used air . . . provides for fresh air heating.

THE TRUCK OF VALUE

GMC TRUCKS

GASOLINE • DIESEL

Whether you have 1 van or 100—

Maintenance cost is an important item in any truck or van operating budget whether it applies to one vehicle or a big fleet.

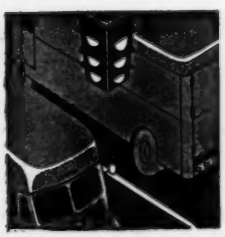
Gerstenslager Custom-built Bodies have a reputation for keeping body maintenance expense at economical levels.

From the time they begin to take shape on the drafting board until they get their final coat of paint in the finishing room maintenance economy is a major objective.

That's one reason you find so many names of successful companies in the highway transportation field painted on bodies by Gerstenslager.

THE GERSTENSLAGER CO., WOOSTER, OHIO

Established 1860



GERSTENSLAGER

custom-built **Van Bodies**

DO YOU KNOW?

By Using BEMIS TITE-FIT TUBING

YOU

REDUCE labor and material costs, because you:

ELIMINATE handling heavy bales of burlap.

ELIMINATE time required to open bales and remove bale coverings.

ELIMINATE time required to cut burlap into sheets.

ELIMINATE using more burlap than necessary.

ELIMINATE all hand sewing.

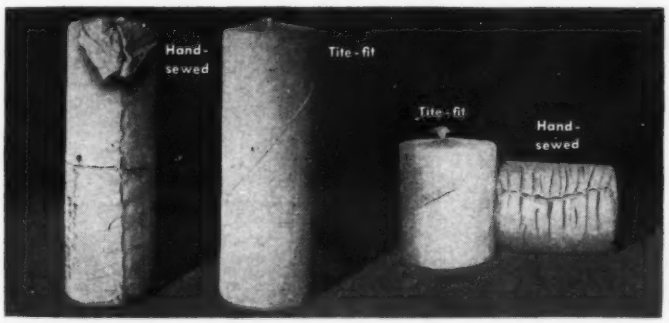
IMPROVE the appearance of your rolls.

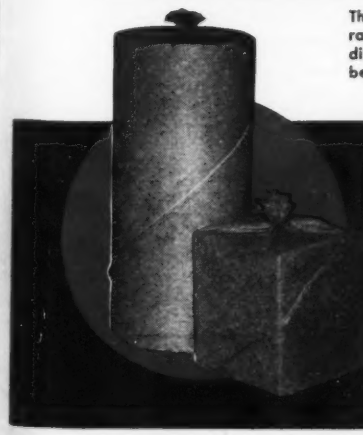
YOUR CUSTOMERS

RECEIVE neat packages that are easy to handle, because there's a handy ear on each end.

SAVE TIME as TITE-FIT TUBING is easily and quickly removed. Just untwist wire tie at one end and slip tubing off.

ELIMINATE chance of cutting into contents and damaging goods, as no cutting of sewing thread or goods is necessary.





This versatile tubing fits almost any shape and a wide range of package sizes. One roll may cover many different diameters and lengths neatly, without waste because TITE-FIT TUBING has *stretch* in both directions.

5 QUICK STEPS

That's all . . . when you package with Tite-Fit Tubing

1. Pull tube well down over object, leaving an overage to cover bottom.

2. Turn package on side and fasten tube at bottom with a wire tie.

3. Turn package upright and use both hands to take up slack.

4. Fasten top with a wire tie close to object to assure tight fit.

5. Cut off the Tite-Fit Tubing about 3 inches above the wire tie.

BEMIS BRO. BAG CO.

Brooklyn 32, New York

Canadian Bag Co., Montreal, and the Ontario Bag Co., Port Colborne, Ontario, are licensed manufacturers of TITE-FIT TUBING in Canada.

MAIL COUPON NOW

Bemis Bro. Bag Co.
5120 Second Ave., Brooklyn, N. Y.

☐ Send descriptive folder on TITE-FIT TUBING

☐ Send sample. Our packages are approximately _____ inches in circumference. (Please specify)

Name _____

Firm _____

Street _____

City _____ *Zone* _____ *State* _____

Specify Fruehauf Truck Bodies

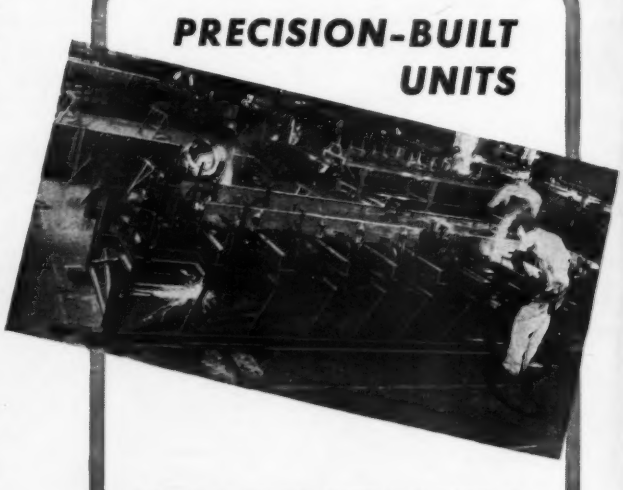
WHY tie up your truck chassis waiting for a body to be built when you can get a Fruehauf Body installed in just a matter of hours—and save substantially on the purchase price, too?

Combinations of Unit-Built Body sections are practically limitless—to fit your needs exactly. All Fruehauf Factory Branches stock them and supply them in knocked-down form for you to assemble or they'll do the work for you.

Here's another "lay-up saver" to remember. When Fruehauf Bodies are on the job, you need never worry about replacement parts. In the event of damage, your Fruehauf Branch supplies a new "section"—and it's built to fit. This cuts costs and speeds your truck back in service.

Get Fruehauf Body Facts Before You Buy Your Truck! Phone your nearest Branch or write—

PRECISION-BUILT UNITS



There's no "nearly right" in Fruehauf design. Body units are precision-built to close tolerances—made possible by automatic machines, special jigs and fixtures, one of which is pictured above. This standardized processing also means uniform quality at production-line prices.

FRUEHAUF TRAILER COMPANY • DETROIT 32 • *Body Division*

EDITOR'S PAGE

Foreign Trade Zones

THE SETTING up of foreign trade zones as a means of promoting foreign commerce was authorized by law in 1934. The intent of the act was to make available to foreign traders in this country facilities, similar to those enjoyed by other commercial nations, in the form of free ports. The commercial advantages to be derived included the storage without bond and without payment of customs duties of goods intended for transshipment and the right to process and manipulate goods and raw materials destined for eventual domestic consumption.

The success of the first foreign trade zone, in New York City, has led to the establishment of a similar operation in New Orleans. Another zone, approval of which recently has been granted by the Foreign Trade Zones Board, is to be established in San Francisco. Studies now are being conducted in other cities with a view to setting up similar operations.

With the passage of the Foreign Trade Zone Act, a formidable competitor of the long established bonded warehouse system was brought into existence and a wholly anomalous situation was created. The law, as it stands today, is discriminatory and detrimental to the best interests of our national economy in that it endows a competitor of the bonded warehouse system with definite rights and privileges denied to qualified public warehouses. The discriminatory character of the law is strikingly evidenced by the content of an article reprinted recently in the Congressional Record at the instance of Congressman Emanuel Celler. This article, in stressing the advantages which foreign traders can secure through the use of foreign trade zones, contrasts, in several instances, operations under the zone and bonded warehouse systems, much to the disparagement of the latter.

It is to be regretted that the legislation known as the Rabin Bill, introduced into the House of Representatives in 1945, which sought to extend to qualified public warehouses the privileges of foreign trade zones, was permitted to die through lack of support. Since many shippers, foreign traders and warehousemen would have benefited by the enactment of such a bill into law, it seems almost incredible that there should have been a want of interest.

An attempt, under the leadership of the American Warehousemen's Assn., was made in 1947 to introduce a substitute measure into the Congress but this, too, was unsuccessful. According to a report presented at the recent AWA convention in Atlantic City by J. Leo Cooke, executive vice president of the Lehigh Warehouse & Transportation Co., and then chairman of the AWA Foreign Trade Zone Committee, there now is reason to believe that a customs survey, authorized last June by the Congress, will recommend the extension of foreign trade zone privileges to qualified public warehouses.

In his report, Mr. Cooke also urged warehousemen to consider carefully the effect of proposed legislation introduced in the Congress by Representative Celler and now before the House Ways and Means Committee. This legislation, if enacted into law, would permit manufacturing in foreign trade zones and grant other discriminatory privileges to zone operators. "There have been no hearings as yet," Mr. Cooke reported, "but when public hearings are set, it is most important that we take a position in this matter and make ourselves heard and felt because this type of discriminatory legislation can determine the future of the warehousing industry in the United States."

The Cost of Small Orders

PROFITLESS small orders can be likened to the straw that broke the camel's back. In the aggregate, even under normal business conditions, small orders constitute a severe strain on our distributive system. Today's spiraling costs make them—when handled unscientifically—an intolerable burden. This fact is being recognized by more and more businessmen and, as a result, new methods, based on cost research, are being adopted by more and more manufacturers and distributors. A notable instance of what is being accomplished in this direction is the adoption by more than twenty manufacturers of recommendations made in small order cost study conducted back in 1936 by D. W. Northrup, president, Henry G. Thompson & Son Co., New Haven.

The new methods outlined in this study fall into two major categories: 1. The formulation of new pricing policies in which prices for broken package lots are revised on the basis of actual handling cost to bear their proper proportion of profit burden. 2. The systematic costing of small orders through the cooperation of distributors.

Distribution needs more precise methods of "product evaluation" and it is to be hoped that more manufacturers and distributors will take steps to "get from under" the heavy burden of profitless small orders.

D. J. Witherspoon

Editor

NEXT MONTH

Topics to be discussed in DISTRIBUTION AGE for May include:

RAIL TRANSPORTATION . . . This vital link in the distribution chain today is hampered by inadequate freight rates, inordinately high operating and labor costs and by insufficient rolling stock and other equipment . . . The importance of rail transportation in our national economy is discussed by staff experts and leading authorities in the transportation industry.

•

AIRLINE TARIFFS . . . Under the Civil Aeronautics Act, the CAB is given jurisdiction over airline rates and tariffs; the Act determines the form in which they shall be published, the instance, supplementation and cancellations of tariffs, filing and posting regulations, and authorization and concurrence in tariffs . . . G. Lloyd Wilson, leading traffic authority, discusses this important subject.

•

FREIGHT RATES . . . Henry G. Elwell, traffic consultant, discusses the timely subject of class, exception and commodity freight rates. The ICC is expected to hand down its decision on Ex Parte 166, the rails' petition for a rate increase, in May or June, and this informative description is of unusual interest at this time.

•

A BASIC COMPENSATION PLAN FOR SALESMEN . . . R. M. Coburn, marketing consultant, concludes his outline of a salesmen's compensation plan. The idea is drawn from fundamentals basic to all industry and can be used, with slight modifications, by any firm, regardless of industry, method of distribution or size of the sales force.

•

BETTER PACKING FOR BETTER SHIPPING . . . Buyers want merchandise packaged and packed in the cheapest manner consistent with safety in transit . . . E. P. Troeger, engineer, outlines a useful procedure in determining the degree of protection required in relation to the mode of transportation.

LETTERS to the *Editor*

Distribution Training

Sir:

I have read with interest your article on our educational program by Mr. Howard in the December, 1947 issue of DISTRIBUTION AGE, in appreciation of which the enclosed may be of interest to you.

Adult education within and out of business is one of the word's greatest problems and I feel that our School in Chicago is doing much to further the adult education program. We have had three Canadian classes over there and are well satisfied with the results. The men attending these classes have all returned to the Branches and in turn are teaching those there some of the things they learned in the School in Chicago.

Good distribution is one of the things we need most and it can only be accomplished through good adult education. Your magazine is very helpful in this respect.

—G. F. Whalen, Manager, Order & Distribution Department, International Harvester Co. of Canada Ltd., Hamilton, Ontario.

Editor's Note: The following are excerpts from the Graduation Address to Canada Company Parts Foreman Class, June 13, 1947, Chicago Central School for Sales Personnel, by G. F. Whalen, Manager, to which Mr. Whalen refers in the above letter:

"I have no doubt that this school has been a real education and experience for you. In graduating tonight I congratulate you—each one of you. You have accomplished something well worthwhile. It should pay dividends for Harvester and for you . . . I shall speak to you about four very important points: mental attitude, education, profit and experience. Walter Dill Scott, president emeritus of Northwestern University, said several years ago that to his personal knowledge more men succeed or fail in life by reason of mental attitude than of mental acquisition . . . Education gives us a knowledge of many things that enables us to evaluate them correctly—not for the purpose of standing up against the Quiz Kids nor to develop us into educated monstrosities or absurdities such as Gilbert K. Chesterton referred to as men who knew the price of everything but the value of nothing. Central School in training seems to me to be the ideal place for furthering your education—as it seeks to combine education with the right mental attitude . . . Samuel Gompers, former president of the AFL, said he could think of no greater crime that a company could commit against labor than to operate without making a profit—so watch your P's and Q's. P's for profit, and Q's to it . . . Now for point 4, "the greatest Roman of them all," experience. For nearly all we learn in the classroom or from the lecture platform or from books is mostly facts and figures, rules and regulations, merely tools of knowledge, hung there on the blackboard . . . and until we take those tools of knowledge . . . place them in our own hands and apply them to our own problems, we know not their value nor their worth to us."

o o o

Automatic Packing

Sir:

In the June, 1947 issue of DISTRIBUTION AGE under subject "Improved Handling Cuts Packing Costs," by Matthew W. Potts, we note that a statement was made regarding cutting cost by use of automatic packing of glass bottles. Can you furnish us with more detailed information in order that we may pursue farther.

Your cooperation in this respect will be greatly appreciated.

—E. F. Kane, Asst. General Traffic Manager, Publicker Industries Inc., Philadelphia, Pa.

Mr. Potts' reply:

In mentioning the packaging of glass into containers, I was thinking of what had been done in the soft drink and beer industry, as well as in the canned goods industry by the Standard Knapp Co., of Middletown, Conn. This company has developed a machine which is being used at the Ballantine Brewery for picking the bottles off the sorting tables, and placing them in cartons and cases for automatic sealing.

I believe you could obtain detailed information by writing to Mr. McPhaul of the Standard Knapp Co., Middletown, Conn., who is familiar with these details.

o o o

Impact Recorder

Sir:

Will you please forward the address of the Analysis Sales Corp. indicated in the Nov., 1947 issue of DISTRIBUTION AGE, page 54, pertaining to impact recorders. This activity is interested in obtaining full information on this equipment for test purposes.

—M. A. Borst, LCDR SC USN, Supply Engineering Dept., Navy Supply Corps School, Bayonne, N. J.

Sir:

In the Nov., 1947 issue of DISTRIBUTION AGE you carried an article entitled, "Watch Those Shocks" and in that article mention was made of the Analysis Sales Corp. We would like very much to have the address of that corporation.

—P. McLennan, Office Manager, California Grape & Tree Fruit Asso. Fresno, Cal.

Editor's Note: The address of the Analysis Sales Corp. is: 1070 Union Commerce Building, Cleveland 14, Ohio.

NEW STANDARD OF THE HIGHWAY

THE NEW INTERNATIONAL KB-8-1

★ Speeds Deliveries

★ Takes Hills Faster

★ Hauls More Net Payload

THE KB-8-1—READY FOR THE ROAD—Engine: International Red Diamond 401; brake HP 140. **Wheelbase:** 137, 149 and 161 inches. **Transmission:** 5-speed, over-drive or direct in fifth. **Rear Axle:** Single-speed or two-speed. **Brakes:** Heavy-duty, extra-capacity, hydraulic, hydrovac actuated, or air brakes. **Fuel Tank:** Large capacity, safety type. **Generator:** 300-watt, 6-volt for fast charging. **Cab:** International; seat and back adjustable; sponge rubber cushions; dual windshield wipers; tachometer; marker lights; hand-control valve and connections for semi-trailer brakes. **Tires:** 10.00 x 20.

THE NEW INTERNATIONAL KB-8-1 is just one in a long list of answers International provides for today's truck transport problems—answers that speed deliveries, cut transport costs and improve traffic conditions.

★ The KB-8-1 speeds over-the-highway deliveries. Shipper, consignee, consumer and operator benefit.

★ It has the extra power to climb hills faster and maintain rigid schedules.

★ It carries more net payload without exceeding its gross weight rating than trucks with the same power but more chassis weight.

International Trucks are completely co-ordinated to the work they do. They're performance-co-ordinated with *specialized* engines, transmissions and axles. They're load-co-ordinated by the exclusive International Truck Point Rating System.

Right now International Dealers and Branches are equipped for expert application of all benefits the new KB-8-1 brings.

And there is an equally efficient International for all other truck jobs.

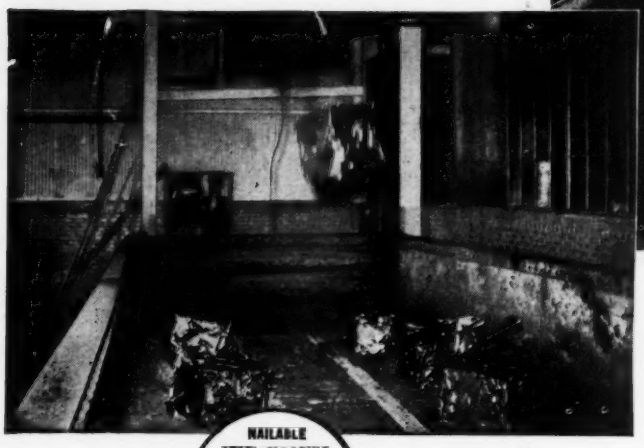
Motor Truck Division
INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

Tune in James Melton on "Harvest of Stars." CBS Wednesday Night.

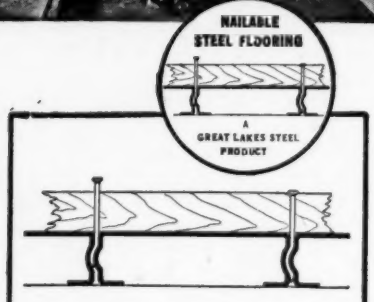
THIS EMBLEM IDENTIFIES GREAT TRUCKS
INTERNATIONAL

INTERNATIONAL Trucks

IT'S NAILABLE...
Handles Finished Goods



IT'S TOUGH...
Handles Rough Freight



Cross-section of NAILABLE STEEL FLOORING with wood blocking secured on top. Nailing grooves are spaced for ordinary 20d nails. The channels of N-A-X HIGH-TENSILE steel are welded to the underframe, strengthening the entire car. A self-sealing plastic in the grooves prevents loss of fine freight carried in bulk.

ALL-PURPOSE NAILABLE STEEL FLOORING

Cuts Railroad Operating Costs— Improves Shippers' Car Supply

Rough loads that require tough flooring—finished products that call for secure blocking—fine bulk freight that demands a tight car . . . *all kinds of freight* can be handled efficiently with NAILABLE STEEL FLOORING. This all-purpose flooring puts an end to needless empty car movement, excessive car assembly operations. It cuts the expense of switching moves for railroads and shippers, and improves car supply.

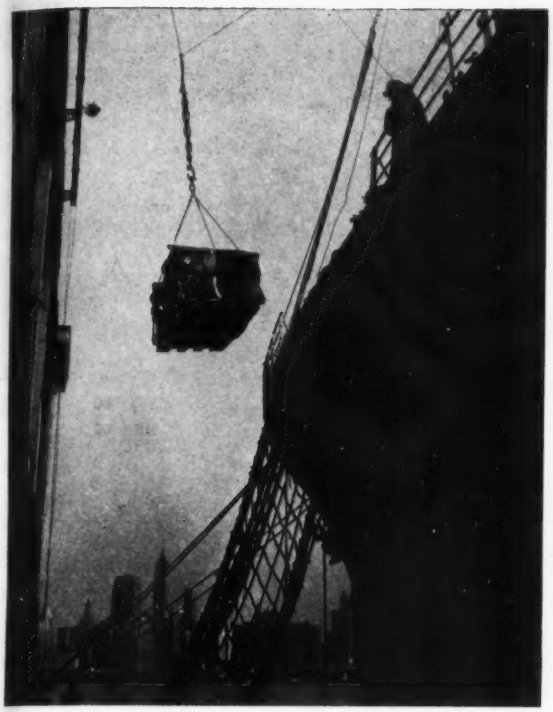
Take the car supply at a steel mill, for example. Nailable Steel Floored gondolas bring in the raw materials—steel scrap, limestone, pig iron. The same Nailable Steel Floored gondolas can be skid-loaded with outgoing finished products —sheets, strip, pipe, bars. There's no need to switch out empty conventional steel plate floored cars and switch in empty wood floored cars. With its rugged channel construction and smooth surface, NAILABLE STEEL FLOORING can "take" the wear and tear of heavy impacts from freight, magnets, clamshells. It retains its flat contour for skid-loading, its nailability for secure blocking. Lading is safer, too, because nailing grooves have up to 400% greater holding force than wood.

Take Advantage of This Three-Way Saving

NAILABLE STEEL FLOORING saves money for you in three ways: It cuts operating costs. It reduces damage claims. It lowers maintenance costs. Write for free booklet.

N-A-X HIGH-TENSILE Steel Offers Superior Properties for Many Railway Applications— Profitable railway applications of N-A-X HIGH-TENSILE steel are by no means limited to Nailable Steel Flooring. With a 50% higher yield strength than carbon steels, N-A-X HIGH-TENSILE can cut deadweight and increase payload in many ways. It combines a high degree of strength and toughness with good fatigue- and corrosion-resistance and excellent cold-forming and welding properties.

GREAT LAKES STEEL CORPORATION
STEEL FLOOR DIVISION, PENOBSCOT BLDG., DETROIT 26, MICHIGAN
UNIT OF NATIONAL STEEL CORPORATION



RATE FOG

Hampers Water Service

By EDWARD K. LAUX

Traffic Manager
The Port of New York Authority

Ship operators, plagued by high operating costs, look to the ICC for the rate adjustments necessary to revive the once popular domestic water services.

STUBBORN resistance, hardly explainable, seems tenaciously to hold back the return to our normal prewar domestic water services. According to all informed reports, coastwise and Great Lakes lines continue to be affected by adverse economic conditions. Intercoastal lines, including all certificated lines, are showing some encouraging results since return to private operations. They are still plagued with high operating costs, however, and strangely enough, they are no longer recognized by our governmental regulatory bodies as vigorous competitors of the transcontinental all-rail lines. Rather the reverse seems to be the case today, odd as it may appear. The railroads have rates so low that they are holding the intercoastal carrier rate structures below that required for economic operation.

Restoration of the popular prewar coastwise and Great Lakes lines under present conditions is unlikely. The U. S. Maritime Com. which operated some of the long-haul coastwise services under temporary authority granted by the Interstate Commerce Com. discontinued these services in the coastwise and intercoastal trades last July. Such withdrawal seemed inevitable from the moment any of the prewar services returned to private operations. Such return to prewar services was limited to coastwise trade between New York and other North Atlantic, Gulf and Pacific Coast ports. Short-haul voyages between North Atlantic ports, including Portland, Boston and Providence, and South Atlantic ports such as Norfolk, Richmond and Savannah, have experienced no revivals and there is no indication of a real desire to get back into business.

Unquestionably, the cargo tonnages for coastwise services will be available. A demand definitely exists for the restoration of these lines. However, operations on a prewar scale cannot be anticipated until there is an improvement in the relationship between costs and revenues. The expectation of some improvement in net operating results through the upward trend in railroad rates is a ray of sunshine on a dark horizon.

Since the general increase in rates became effective under authority of the ICC, Ex Parte 162, early in 1947, the railroads, water carriers and other transportation lines which have suffered through soaring costs of labor and materials, have been permitted to increase their rates about 20 percent for general application under an emergency interim agreement.

The commission will continue consideration of the rail carriers' petitions which, as finally

amended, call for general increases ranging from 31 to 41 percent. These increases, if granted, are to be added to the increases awarded early in Jan. 1947, except that hold-downs would be observed on certain water competitive commodities. Should these increases be awarded in full, the range of increased freight rates over the past ten years would be approximately 94 percent. Thus there may be an opportunity for the leveling off of the difference between revenues and operating expenses.

This may result in some profits for domestic water carriers. The prospect seems the more likely because of the effort which is now being made to reduce operating expenses through the increased efficiency resulting from the greater use of improved mechanical devices for the loading and unloading of cargoes; through alterations in vessel design, and through the quicker turnaround of ships made possible by improved terminal facilities.

Adjustment of the difference between unnecessarily depressed water competitive rail rates and normal rates will bring increased encouragement to the water carriers. This rate adjustment is now before the ICC, Ex Parte 164, Docket 29663, Transcontinental Rail Rates. Additional considerations are the rail-water and the rail-water-rail rates and divisions applicable between the Southwestern territory and the East, many of which have become unduly depressed because the differentials have widened as a result of horizontal increases awarded over the past ten years. Railroad Fourth Section depressed preclusion rates competitive with inland waterways are now coming up for recommendation by the ICC and are bound to result in some additional lifting of the rate ceilings created by competition between rail and water lines, when the operating costs of both were on a very low prewar level.

The railroads would like these investigations by the ICC dismissed on the grounds that the increases sought by the water lines several years ago already have been realized by the increments resulting from the Ex Parte proceedings 162 and 166. The position of the roads will be resisted by the water carriers, of course. As a matter of fact, the commission's order in pending proceedings states that the inquiry is made with a view to determining whether the rates (specified in orders), or otherwise, are unjust and unreasonable or violate Section 1 of the act. If such rates, or any of them, shall be found to be unjust and unreasonable, the commission will specify just and reasonable rates, or maximum and minimum rates to be charged, as provided in Section 15 (1) of said act.

An interim report typifying the Commission's present attitude, Docket 29663, states "For present purposes, the important and inescapable fact disclosed by this record is that many transcontinental and intercoastal rates still bear the impress of competition between rail and steamship lines which was rife at a time when the operating costs of both sets of carriers were on a much lower level than they are today." The report adds, "We make no finding as to whether the rates here approved are lower than the minimum reasonable rates. Consideration of that question will be reserved until completion of the investigations."

The need for a body such as the ICC to act as the governmental agency responsible for rejuvenating our domestic water services in line with the national transportation policy, has been recognized by the President's Advisory Committee on the Merchant Marine. In its report dated November, 1947, page 13, the following statement is made:

> "The committee's recommendations for improving the situation in domestic shipping are outlined below in the order of importance which the committee attaches to them:
>
> "(a) Early settlement should be effected of the petition made to the Interstate Commerce Commission by the water carriers in the coastwise and intercoastal services. The committee urges a rapid resolution of the problem as being of the utmost significance. In the balance rests the return to operation of a large number of ships. From the view of national security, the value of such shipping in successful operation and the potential release of a demand for additional shipbuilding are very important."

The Port of New York Authority, as early as Jan. 1946, made observations characterizing the necessity for adequate and reasonably stable rate levels for the future, in its report on the Economic Importance of Coastwise Shipping.

Furthermore, the House Select Committee on Foreign Aid in its recent report to Congress (Transportation as it Affects the European Recovery Program, dated Feb. 17, 1948) had this to say:

> "The Maritime Commission's authority to bare-boat charter vessels to domestic operators at low rates for coastwise and intercoastal service should be extended to avoid the withdrawal of vessels now in this service. This withdrawal would throw an additional burden on the rails. The possibilities of a rate structure which would stimulate further expansion of intercoastal operations should continue to be explored by the Interstate Commerce Commission."

The Chairman of the Maritime Com. in submitting to Congress the Commission's Annual Report for the year ended June 30, 1947, stated:

> "The domestic dry cargo fleet, those ships operating in coastwise and intercoastal trades and to our territories and possessions, which formerly constituted about 60 percent of the active merchant marine, has fallen to about 12 percent in the postwar period. This group is important to national defense because it is generally in nearby waters and most of it is immediately available in case of emergency. It is protected by law from foreign competition, but coastwise and intercoastal carriers are subjected to the competition of land carriers, especially the railroads, which for years have maintained competitive

rates so low as to deny to water carriers a reasonable profit. The sharp rise in costs since the war has made profitable operation in this trade very difficult at present. Some relief has been obtained through rate increases granted to railroads, which enabled water carriers to raise their rates to a corresponding degree. Some operators have undertaken to carry on services which the Maritime Commission relinquished on July 1, 1947, but adequate service cannot be provided until satisfactory rate adjustments are made or some other solution to the problem is found."

The Maritime Com. in commenting upon Senate Joint Resolution 173, 80th Congress, providing for continuation beyond Feb. 29, 1948 of the Maritime Commission's authority to sell, charter and operate vessels, said:

"The situation with respect to the operation of vessels in the coastwise and intercoastal trades of the United States has not materially changed in the past year, and it appears essential that the Maritime Commission has authority to continue the charter of vessels for operation in these trades until the freight-rate structures and other conditions are altered to permit the acquisition and operation of vessels in such trades under private ownership."

In order to assure the continuance of essential domestic water services, the Maritime Com. on Aug. 20, 1947, reduced the rate of charter hire for war-built vessels employed in intercoastal and coastwise services from the generally applicable rate of 15 percent of the statutory sales price of such vessels under the Merchant Ship Sales Act, to 8½ percent payable unconditionally, with the balance of 6½ percent payable only if earned. It may be said that under this arrangement the government has a direct financial interest in the earning power of the vessels involved. This would be true particularly if the earnings were insufficient to obligate the operators of any charter vessel for charter hire in excess of 8½ percent.

The Port of New York, through which the greatest tonnage of record was moved during the peak period of World War II, has a definite stake in the full restoration of our domestic water carriers. In prewar times there were 21 shipping lines operating out of the port of New York in deep water domestic service to other Atlantic, Gulf and Pacific ports. Eleven coastwise companies furnished service to 33 ports from Portland, Me., to Brownsville, Texas, with an aggregate sailing of 150 to 180 per month. Nearly 100 vessels were engaged in this trade carrying general cargo, transporting 6½ million long tons. This was in addition to seven companies engaged in the movement of 33½ million tons of bulk cargo such as phosphate, sulphur, coal and petroleum. Intercoastal service via the Panama Canal was furnished by 10 lines operating anywhere from 150 to 200 vessels and maintaining approximately 25 to 40 sailings per month, to the west coast ports of Los Angeles, San Francisco, Oakland, Seattle, Tacoma, Portland, San Diego and Stockton. These lines carried approximately 2,375,000 tons.

The domestic shipping represented approximately 36 percent of the total deep water ship arrivals and departures, and about 33 percent of the total general cargo business activity. These carriers are now moving about one-half of the cargo carried in prewar, the vessels numbering today approximately 55 in the intercoastal trades and 16 coastwise.

The small difference reflected as savings or differentials in the rates of the domestic water carriers has definitely militated against their opportunities to secure more of the tremendous volume of available tonnage. The narrowing of the differentials contributes in a large measure to the so-called depressed preclusion rates of the railroads. A large number of the domestic water carriers do not have joint rates with the rail lines applying to and from the hinterland, and this is particularly true of the intercoastal lines. Hence in adjusting their rates between ports such as New York and the Pacific coast the level of the port to port rates is adjusted to take into account the rail charges, mostly locals, for the movement of freight from origin to the port of sailing, or from the port of arrival to the inland destination. Marine insurance and port charges must be added at both ends of the water transportation.

Ordinarily, one would be led to believe that when a rail rate is increased 50c per 100 lb. a corresponding increase could be added to the all-water port to port rates, but this is not the case. The rail factors from and to the hinterland and the port of loading or unloading are also increased. The other charges and the measure of these increases must be absorbed by the water lines to remain competitive.

This condition would be substantially alleviated if the railroads and the intercoastal lines could be made to agree on the publication of joint rail-water, rail-water-rail and water-rail rates, between the hinterland points on the basis of a recognized differential under the standard all-rail rates, and divisions of the rates agreed upon on some equitable basis between the two classes of carriers. Under such a plan doubtlessly the port to port rates, all-water, competitive with the standard all-rail rates to and from the same ports could be adjusted upward without an indication that such rates were designed to take care of the freight movements to shippers or consignees located at interior points where rail service is necessary to the loading port or from the unloading port to the hinterlands. This is a hopeful sign.

Eleven coastwise lines with 100 vessels operated to and from New York prior to the war. Of these lines only 3 have restored year-around services, and a fourth line operates only seasonally. Five lines popular before the war have not made any move to restore their services. Those that are now operating privately come within the long voyage category.

The intercoastal and coastwise lines are commencing to show some encouraging results, but the going is slow and occasionally discouraging, particularly when confronted with bad weather conditions that

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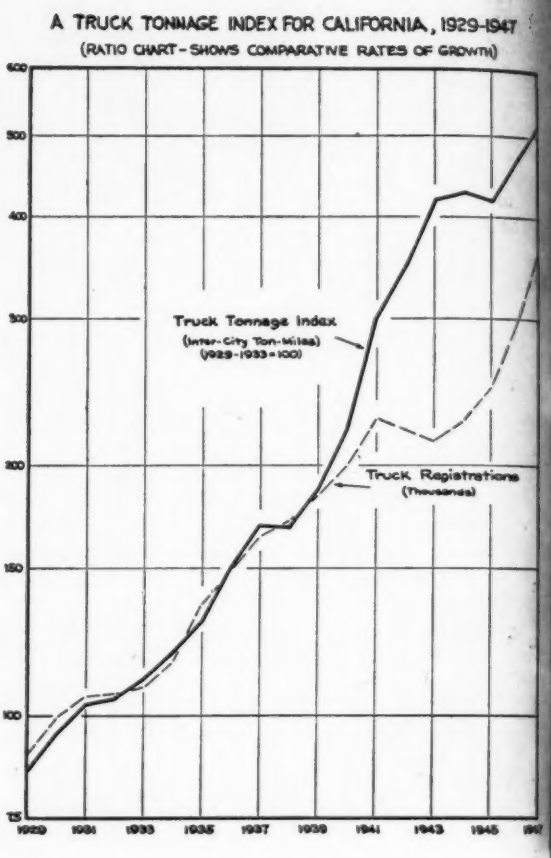
Regional Trends in Truck Tonnage



This new and widely applicable technique for estimating regional trends in truck tonnage should prove of value to all users.

By WILLIAM A. SPURR

Professor of Business Statistics
Stanford University

THE phenomenal growth of the trucking industry in the United States is well known. Yet there are significant differences in regional trends not revealed in the national data available. In California, for example, the rise of the industry has been even more spectacular than elsewhere, since California is the nation's fastest growing state and now has the country's largest fleet of trucks. This report provides estimates of trends in inter-city truck ton-miles for California from 1929 to 1947, using a method that may be applied to any state. Detailed work sheets illustrating the procedure may be obtained gratis by writing the author.

The data heretofore available for estimating regional trends in truck tonnage are not believed to be satisfactory. Truck registrations are useful, but they understate the real growth in tonnage hauled because of increasing loads per truck, longer hauls and particularly the sharp curtailment of truck sales during the war. Road checks represent too small a sample of total traffic and are available for too few years to show reliably the longer term trends. Sales of butane, propane and diesel fuel don't show truck ton-miles accurately, and are affected by shifts between different types of fuel. Motor carriers' revenue reports to the public utility commissions are unsatisfactory as measures of tonnage, and also exclude smaller carriers.

A regional index of truck transportation has therefore been compiled indirectly by the following method: (1) The Automobile Manufacturers Assn. data on inter-city truck ton-miles from 1929 to 1947, adjusted by the Dept. of Commerce, were selected as the best indicator of tonnage trends for the United States as a whole;[1] (2) The trend in California's part of that tonnage was assumed to be proportional to her share in national income.[2] This assumption does not yield the actual tonnage for California, but it provides a close approximation of year-to-year trends, using some base period as 100 percent. The average tonnage for the first five years available, 1929-1933, is used as the base (100 percent) since both prosperity and depression are represented.

The resulting index of truck transportation is shown in the chart, using a semi-logarithmic

[1] U. S. Department of Commerce transportation index for trucking was taken from *Survey of Current Business*, February 1947, p. 23, and earlier issues. Estimates for 1946 and 1947 were secured from the Automobile Manufacturers Association. (Interstate Commerce Commission estimates are based on revenue data, and are therefore inflated by rate increases.)

[2] State income data for 1929-1946 are reported in *Survey of Current Business*, August, 1947, p. 21. Estimates for 1947 are from January 1948 *Survey* and California Chamber of Commerce.

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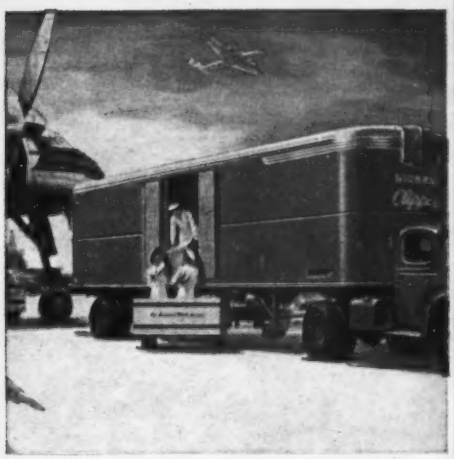

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STOP GET A TRUCK

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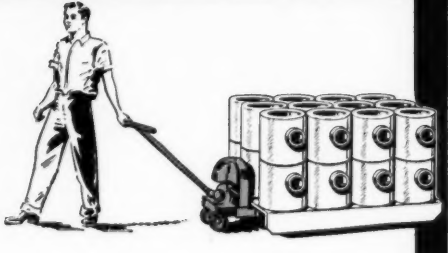

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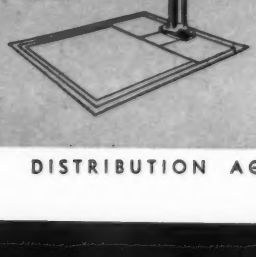


Servicing Handling Equipment

By MATTHEW W. POTTS
Materials Handling Consultant

The growth of unit installations of materials handling equipment makes the solution of the servicing and preventive maintenance problem a must . . . In this article, Mr. Potts discusses current developments in this field and the all-important question of who should pay service and maintenance charges and how these charges should be determined.

UNIT installations of materials handling equipment are becoming more and more frequent, and this brings the service and maintenance problem very much to the fore. In the case of continuous conveyors, maintenance generally consists of lubrication, tightening floor anchor bolts, or the occasional changing of a motor or gear, all of which can be done by the mechanical department of the plant. Installations of this type of handling equipment are made in plants which have a maintenance department as a definite part of the organization.

When units such as lift trucks, tractors, fork trucks, mobile cranes, etc., were first made available to industry, the installations were primarily in large industrial plants which maintained service departments. As a result, the manufacturers and distributors of mechanized handling equipment were not called upon for preventive maintenance, nor were they concerned with overhauling and repairing. Replacements were made by the plant maintenance organization and required parts supplied direct.

In recent years, however, the distribution of materials handling equipment has expanded. Unit installations are increasing in number and many such installations are being made in plants which have no maintenance department nor facilities for adequate servicing. Since many of these plants have but one piece of equipment, it is essential that it be ready for operation at all times. After a plant sets up a fork or lift truck operation, the breakdown of equipment, and the attendant return to costly and time-consuming manual handling, is an aggravating, if enlightening, experience. Nevertheless, some purchasers feel that they cannot afford two units, one to serve as a standby; therefore some such purchasers are demanding, sometimes unfairly, standby maintenance service on the part of the manufacturers.

To meet this need, some manufacturers have established their own maintenance and repair centers in large cities such as New York, Chicago, San Francisco, etc. While it is true that replacement services, including some repair, have been maintained for years by some equipment producers, the new service stations for fork trucks, tractors, lift trucks, etc., are more complete and elaborate. The enlarged services require a large investment, in building, in parts, in personnel, etc.

Some manufacturers have avoided this costly setup by establishing independent distributors who are required to maintain this service as a part of their sales program. This procedure is patterned after that of manufacturers of road and construction machinery; however, materials handling manufacturers do not allow the same large discounts to their distributors as do the road and construction machinery manufacturers.

Nevertheless, these independent distributors have done a good job in building up service organizations, frequently without assistance from the manufacturers, even in the matter of furnishing information on the preventive maintenance requirements of their equipment. Lacking such specific information, efficient servicing is difficult because of the varieties and types of units on the market. Obviously it is impossible to anticipate the life of various parts under widely varying conditions of use and to carry adequate replacement stock. Information, based on studies made by the equipment producers, is not available to distributors who undertake maintenance. In the case of industrial plants, preventive maintenance is generally practiced. Even here, however, materials handling equipment is often neglected until a serious breakdown occurs.

In the case of small warehouses, grocery distributors, cement block plants, building supply yards, small industrial plants of all types,

(*Continued on Page* 46)

AIRCARGO CONTAINER DEVELOPMENTS

BY JACK GEDDIE

Special Correspondent

Although the production of sturdy, lightweight containers, specifically designed for aircargo, still is an infant industry, the trend to research and experimentation in this field is accelerating.

By JACK GEDDIE

Special Correspondent

WHEN OUR forebears in the days of yore transported their boxes of "house'n goods" across the continent in their faithful Conestogas, their one objective was to make their shipping containers strong. So strong, in fact, that neither the spine-wracking jar of steel rim wagon wheels bouncing off boulders nor the impact of current, encountered in fording rivers could render the crates and containers ineffective.

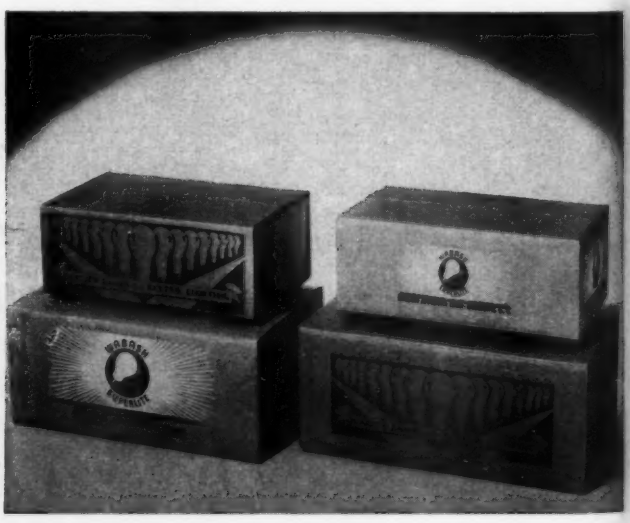
The strength that our forbears built into their shipping containers meant weight—a lot of weight. But with the advent of the air age, there has arisen a demand for lightness without the sacrifice of the much needed element of strength, a challenge to the laboratory of the individual and to that of industry alike.

Many notable steps in the right direction currently are being made by a great variety of persons acting for themselves and for industrial concerns, but to date the production of aircargo containers that legitimately may be classified solely as such is still in its infancy. To meet such a classification aircargo containers must possess varying degrees and proportions of lightness and strength.

The aircargo container must be suitable for transportation by air, and equally must it be suitable

Plastic polyethylene bottles manufactured by Plax Corporation of Hartford, Conn. Container is made from polythene flake manufactured by E. I. du Pont de Nemours & Co. Ideal for air transport of liquids, cosmetics, etc.

Corrugated and solid fibre containers manufactured by Robert Gair Company, Inc., have been found ideal for air transportation for a great variety of merchandise, goods, etc.



for transportation by truck from the door to the airport; and conversely, from the airport to the door. In the procession of the transportation of cargo from door to airport, by air to its destination, and from airport to door, several types of handling and treatment are involved.

The cargo container is submitted to stacking on the truck bed, it suffers the bumps of highway and road and in addition, the cargo itself often times suffers from the roughness of an air ride strewn with air pockets.

The aircargo container, as such, must have varying degrees of strength and lightness. The lightweight factor is that which engenders low shipping rates. The strength factor is that which offers protection to the merchandise or cargo being shipped. For certain types of cargo, the factors of strength and weight may be varied to suit particular requirements. And, in the extreme, the container may be done away with altogether, and the cargo be shipped bare, because there is no need of protection, as in the case of a tire or similar object.

Because of the great variety of cargo being shipped by air today, containers take on many forms. The most used today are fibreboard, plywood, wirebound, wooden containers, bales, bags and bundles. Where a fur coat can be shipped with nothing but a plastic bag covering it, a television set needs much more protection. The first thought is the safety and security of the merchandise. That suggests strength.

The normal thing would be to build a container of solid wood and pack the television set tightly therein. But the factor of lightness is thereby sacrificed and the shipping cost boosted higher. Thus, there must be some balancing of strength and weight. Aircargo container specialists such as Charles L. Saperstein would recommend the substitution of plywood for solid lumber, giving much lighter weight with practically the same strength. Plywood specialists would point out further that plywood gives strength in every direction, because of the cross grained lamination process that plywood undergoes, whereas solid lumber can offer strength only in certain directions.

J. D. Malcolmson, technical director of Robert Gair Co., Inc., points to the favorable characteristics of corrugated and solid fibre boxes for air cargo service. In addition to the lightness, "the air freight package must be strong, rigid and have adequate cushion protection against outside shocks and impacts," Malcolmson declares. "It should also have a surface which permits it to be handled without fear of nails or splinters. Other requirements include low cost, insulation against heat and cold, ease of efficient sealing, ability to take multi-color printing and relatively small size. The corrugated and solid fibre box has all these properties to an unparalleled extent."

Fibreboard containers are logically ideal in air-freighting a great array of merchandise from the strength - weight standpoint. In many cases, when heavier cargo is sent by air, some of the lightness must be sacrificed for strength. Hence, in the transhipment of an airplane piston, which is heavy and which needs protection, the plywood container is the one which hits a happy medium between the varying degrees of strength and weight. A solid lumber container would give more strength than is necessary, and also would engender a great deal more expense in shipping. By sacrificing some of the weight, but attaining sufficient strength, the expense factor is cut down.

Treatments of fibre containers with wax and plastic substances during the war provided a means for air shipping fresh fish, fruits,

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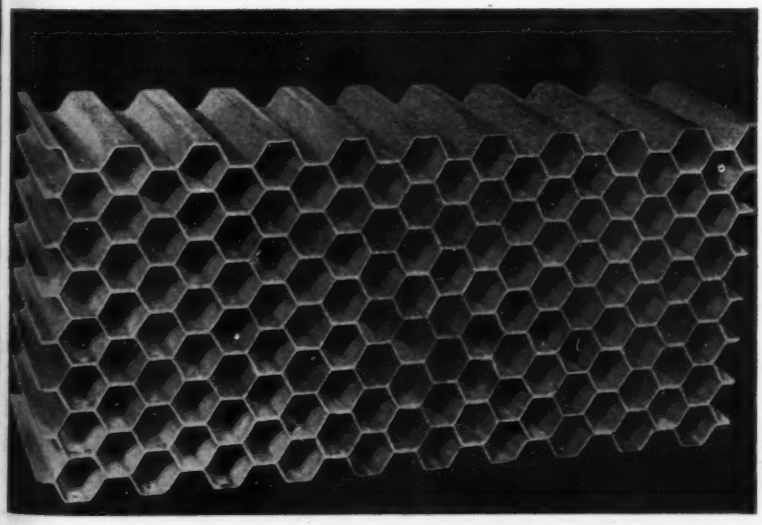
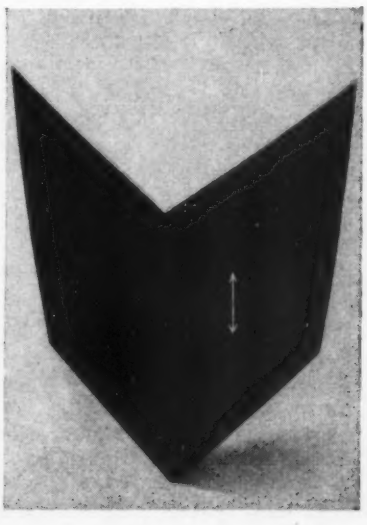
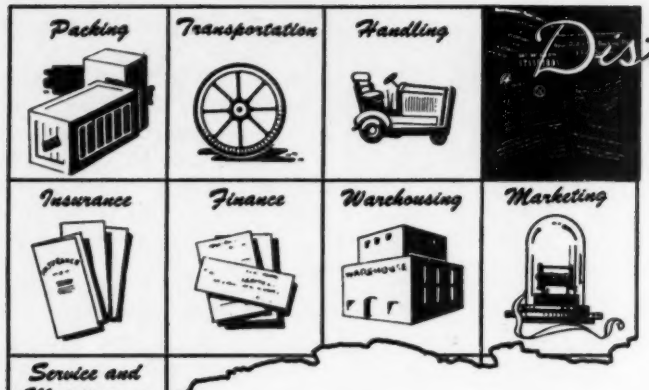
"Honeycomb," manufactured by United States Plywood Corp., is a material with honeycomb-like core, as above, faced with either aluminum or wooden veneers. It currently is being developed for a refrigeration air cargo container.



Tekwood, a veneer-kraft laminate, manufactured by United States Plywood Corporation, is gaining increasing popularity as a container material, because of many versatile characteristics.





Distribution STANDARDS and SPECIFICATIONS

Materials Handling

The dearth of materials handling standards is keeping costs up and efficiency down . . . Mr. Melnitsky discusses several reasons for the lack of handling standards and inquires into the procedure of developing them.

By BENJAMIN MELNITSKY

IN THE previous article a rather fanciful analogy was used: distribution was personified as a giant with standards as his shadow. When we talk of the materials handling phase of distribution, our analogous shadow assumes the length, breadth, and magnitude of the shadow cast by a toothpick at high noon. In other words, there are exceedingly few materials handling standards and specifications.

This can be verified readily by examining any one of the many devices that lift, carry, or lift-carry materials. It will be found that although standard metallic and non-metallic materials are used to fabricate component parts, the parts themselves are not standard. Although the forks of the motor-driven lift truck are forged from standard steel billets, the dimensions and shape of the forks are non-standard. The small fuse in the industrial truck's electrical system has been standardized by SAE; wire and wire sizes in the overhead electric hoist meet the standard requirements of the National Electrical Code; and in the battery truck there are standard NEMA connectors. These and other parts are standard; yet none of these standards were designed to meet the problems that are unique to materials handling devices.

Apparently this article has set for itself the task of discussing standards which do not exist. However, there is some justification for this apparently futile investigation. An analysis of lack of standards in this phase of distribution should aid in arriving at a sounder appreciation of the multiplicity of standards elsewhere. The explanation of the situation in materials handling should serve to highlight the manifold problems present in the process of standardization.

Working on the soon-to-be-proved hypothesis that there are few significant materials handling standards, we can go from there to the logical question: Since materials handling seems to be a flourishing industry, what's so terrible about lack of standards? A good overall answer could be: Because of lack of standards costs are higher and efficiency lower. Of course, that *is* the answer. However, to be a bit more specific, a few imaginary witnesses might be called in. Their evidence might run somewhat as follows:

Witness A (driver of industrial truck):—"We've got five different kinds of trucks in our plant and each one of them works differently from the next one. If I

Conveyor Safety Standard

THE American Standards Assn. has announced the first safety standard for conveyors. The American Standard Safety Code for Conveyors, Cableways, and Related Equipment, B20.1-1947. The standard was prepared by a sectional committee under the sponsorship of the National Bureau of Casualty and Surety Underwriters and the ASME. It has long been felt that conveyors, which have grown to a 125 million dollar business, needed safety standardization. The records of the National Safety Council prove that unnecessary handling of materials means unnecessary exposure to accidents, and while the introduction of conveyors has reduced accident hazards from manual handling, it has introduced some new hazards. Safety of the worker is the prime consideration of the new standard. Complete definitions of all types of conveying machinery are given in the code, as well as specific safety regulations in design and operation of them.

pull the shift lever down on one, the truck goes forward; on another it goes backwards; on still another it stalls. It's annoying!"

Witness B (purchasing agent):—"Every time a hoist breaks down, I've got to air-mail a purchase order to the manufacturer. I can't get parts locally because they're non-standard and because the industrial supply houses in town do not carry the line. While waiting the week or 10 days for the parts to arrive, my life's not worth a cent around the shop."

Witness C (storekeeper):—"We designed the aisles in our warehouse so that there would be as little waste space as possible and still enough room for trucks to operate safely. Well, we're in one heck of a mess now. We got in an order of five new fork trucks and we've had headaches ever since. The trucks operate fine, but they have a longer turning radius than the old ones . . . they can't be turned around in the aisles and they can't be maneuvered properly in the warehouse. Either we'll have to widen all the aisles or go back to the old trucks."

Witness D (safety engineer):—"While the use of materials handling equipment has resulted in marked reduction in the number of accidents to workers, standardized control would still further reduce the accident hazard. Just the other day, one of our crack operators had a near-accident because the hoist he was using had a different lowering control than the previous hoist he had been using."

Witness E (carpenter, maintenance department):—"All day long, all I do is make skids and pallets. Because one truck has extra short forks and regular skids fall off, I've got to make special sawed-off skids. Another truck has an extra wide platform, so I've got to make special skids for it. Seems that every truck in the shop needs tailor-made skids and pallets. But when we ship stuff out, that's when I really get the headaches. One customer wants low skids, another wants high ones; one wants wide pallets and another wants narrow ones. I'm

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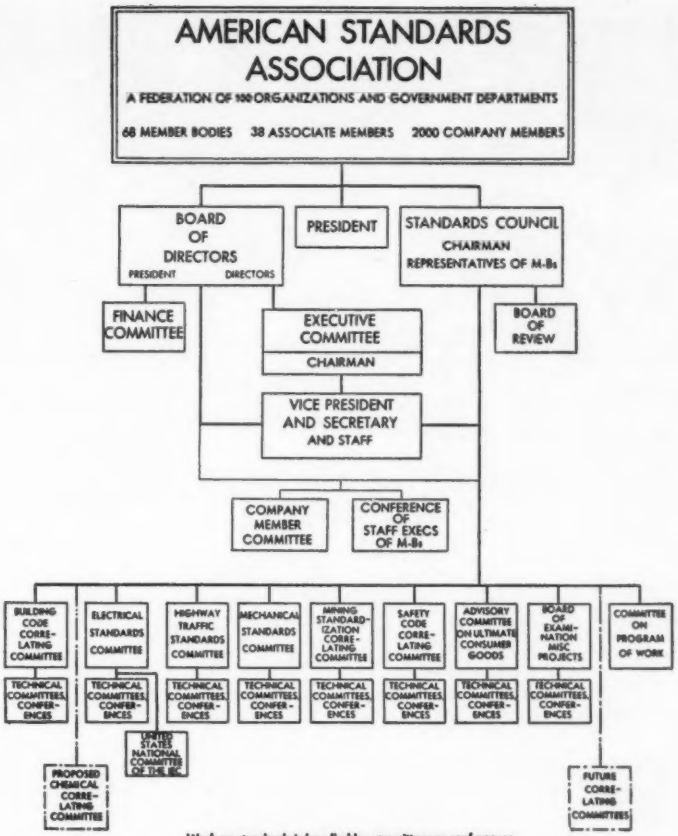


Work on standards is handled by committees or conferences on which all groups concerned are represented. Most of the committees work under the leadership (sponsorship) of one or more of the organizations chiefly concerned.

M-Bs = Member bodies

SOURCE LIST OF MATERIALS HANDLING STANDARDS

American Standards Association, 70 E. 45th St., New York 17, N. Y.

() A17.1—1937 Safety Code for elevators, dumbwaiters, and escalators plus A17.3—1942 (supplement) both in one volume $1.50
() A17.2—1945 Inspection of Elevators (Inspector's Manual) $1.50
() B20.1—1947 Code for Conveyors, cableways, and related equipment ..... $
() B30.2—1943 Safety Code for cranes, derricks, and hoists $1.80
B56 Safety Code for industrial power trucks (under development)

American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N. Y., has available for sale the above-listed ASA standards.

Associated Factory Mutual Fire Insurance Companies, Inspection Dept., 184 High St., Boston 10, Mass.

() Safety Practices Bulletin No. 11.24 Industrial trucks and tractor fire hazards . . . free of charge
() Approved Equipment Bulletin lists gasoline-engine type industrial trucks which meet their standards for fire protection.

Association of Lift Truck and Portable Elevator Manufacturers, P. O. Box 295, Stamford, Conn. Publishes a large, wire-bound volume which includes catalogues as well as member-company standards for lift trucks, skid platforms, portable elevators, and storage racks.

British Standards Institution, 24 Victoria St., London S.W. 1, England

() B.S. No. 466 Electric overhead traveling cranes for factories, workshops and warehouses 4/

Electric Hoist Manufacturers Association, 71 West 35th St., New York 1, N. Y.

() Standard Specifications for wire rope electric hoists . . . free of charge

Electric Industrial Truck Association, 29-28D 41st Ave., Long Island City 1, N. Y.

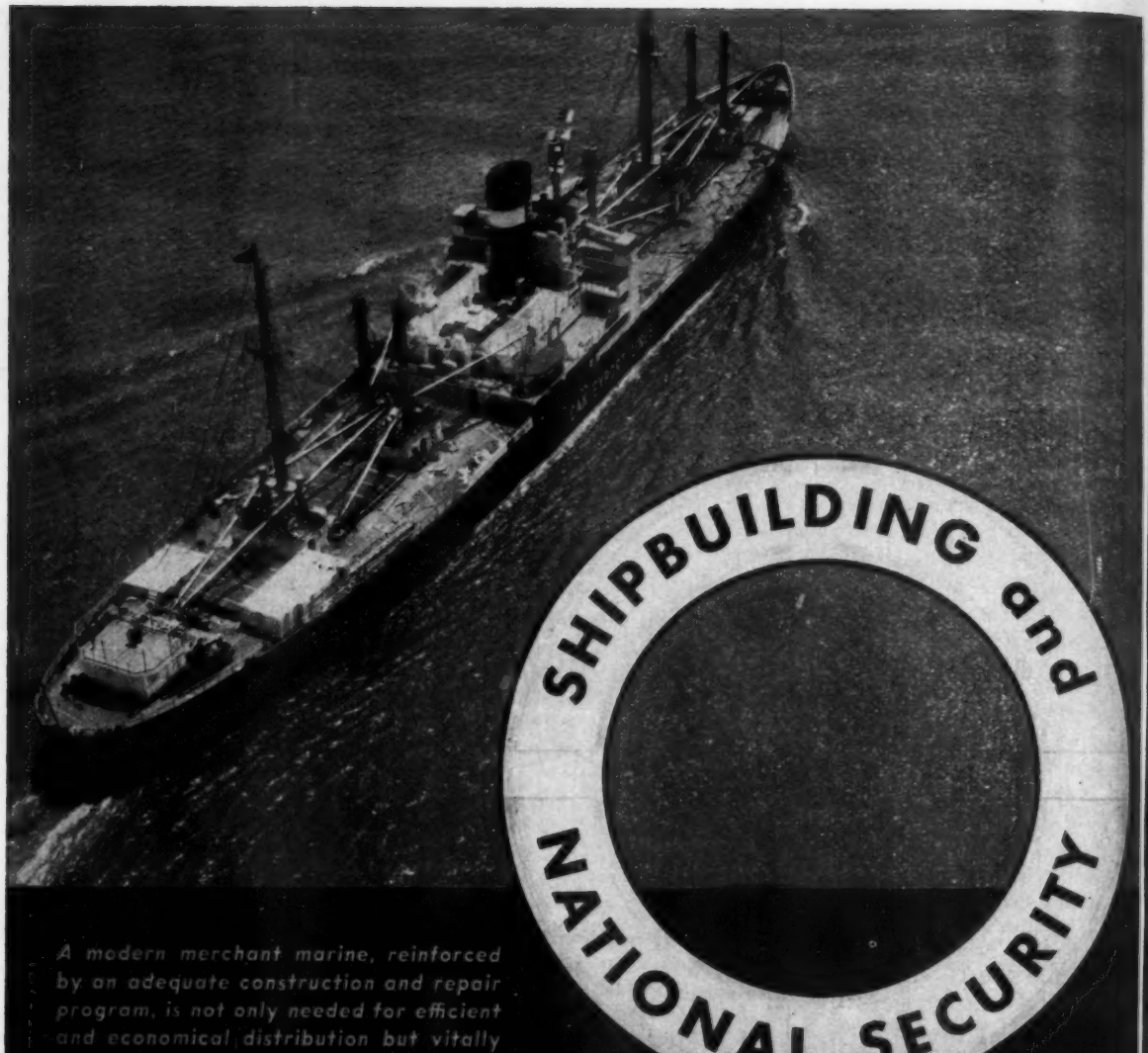
() Standard specification of spark-enclosed construction for electric industrial trucks and tractors . . . free of charge
() Standard specification of automatic battery charging motor-generators, rectifiers, and panels . . . free of charge

National Bureau of Standards, Department of Commerce, Washington 25, D. C.

() Simplified Practice Recommendation R95-30 Skid platforms $0.05
() Simplified Practice Recommendation R103-33 Industrial truck and trailer solid tires $0.05
(write to Supt. of Documents for both)

National Safety Council, 20 North Wacker Drive, Chicago 6, Illinois.

() Safe Practices Pamphlet 4 Overhead traveling cranes $0.35
() Safe Practices Pamphlet 15 Elevators $0.35
() Safe Practices Pamphlet 33 Industrial power trucks and tractors $0.35
() Safe Practices Pamphlet 35 Conveyors $0.35
() Safe Practices Pamphlet 54 Handling material, hand and truck $0.35
() Safe Practices Pamphlet 55 Industrial power trucks and trailers $0.35



A modern merchant marine, reinforced by an adequate construction and repair program, is not only needed for efficient and economical distribution but vitally essential to national security.

SHIPBUILDING and NATIONAL SECURITY

By L. R. SANFORD

Executive Vice President
Shipbuilders Council of America

A MODERN and adequate merchant marine and an effective and progressive shipbuilding and ship repairing industry are indispensable to national security and that reason alone justifies their maintenance even though there were no other reasons. That statement of fundamental import to our national welfare, even to our national existence, is not merely wishful thinking by ship operators and shipbuilders on their own behalf, but is the basic concept of laws passed by the Congress dealing with the merchant marine in 1916, 1920, 1928, 1936 and 1946. We have the same concept expressed in the report of the Harvard School of Business Administration prepared jointly for the Navy and Maritime Commission in June, 1945 after an exhaustive study, and in the more recent report of November 1, 1947 by the Advisory Committee on the Merchant Marine appointed by the President.

I am convinced that there are few who would take issue with that premise if everyone had a correct understanding of the basic facts. So our immediate problem is to create that correct understanding and dispel the fog of misunderstanding and misconception that, unfortunately, so generally circumscribes the thinking of so many people in regard to the merchant marine.

I shall deal only with the high-spots of the national security phase of the problem, although there is much to be said in justification of the merchant marine from other angles.

If we must have a modern and adequate merchant marine, we perforce, must have an effective

Address before the Ad Club of Washington, Washington, D. C., Feb. 3.

and progressive shipbuilding and ship repairing industry in this country, the shipbuilders to build the ships and the ship repairers to maintain them. It is idle to suggest that we have our ships built and repaired abroad. Even if that were practical, which it is not, how then would we support and supplement our merchant marine as well as our Navy in our time of greatest need, when foreign yards would be no longer available to us? The merchant marine and the shipbuilding and ship repairing industry are interdependent, each upon the other, and the United States is dependent upon both.

Two world wars have established, beyond possibility of argument, the fact that the merchant marine is vital—the fact that transportation of men and goods is the arch which spans the world for our military services in the successful prosecution of a war and shipping is the keystone of that arch. The shipbuilding and ship repairing industries are the abutments of that same arch, without which the keystone would fail.

There are those who would persuade you that the days of shipping and navies are over and that a new atomic age is being ushered in—that air power and atomic bombs are all the protection we need. We all realize that the strategic concepts and logistics of modern war are subject to continuous change, but the fundamental principles of warfare are still basic. We must not only destroy the enemy's industrial capacity and paralyze his transport, but we must also fight on his own ground, not ours, and, to do so, we must transport men, munitions and supplies great distances, promptly, and in huge volume. It has been said that air transport can undertake that mission. Admiral Nimitz, in his valedictory upon his recent retirement, has effectively disposed of that suggestion as completely impractical. Sea transportation will continue to be the mainstay of the military services for aggressive warfare which is the only kind of warfare with any chance of success. The navy will still pave the way for the army and the air force. Control and use of the seas will still be as vital as they were in the days of Admiral Mahan.

It is time for clear thinking on the subject of national security—time for dispensing with politics and personal interest—time to consider only the national interest—time to properly coordinate all the elements of national security—time to weld them all into one effective and irresistible weapon which will command the respect of the entire world. Such a weapon under the control of a peace loving country such as ours cannot fail to be the most potent advocate of peace in a troubled world.

What are these elements? They are the army, the navy, the air force and the merchant marine. The last one, the merchant marine, is indespensable to each of the other three. They must be backed up by the industrial capacity of the United States to produce for each what it needs at the proper time, rate and volume to assure continuous and immediate national security.

In the event of emergency, that industrial capacity must be instantly ready to expand to meet wartime requirements. It follows that all such industry must be effective and progressive to fulfill such a requirement. It cannot be that unless it is sound and healthy.

What present evidence is there that these vital elements of national security are being properly coordinated? Each element has its protagonists. The military service and the maritime commission cannot recommend directly to the Congress (or even to some overall policy board) what they consider necessary in the way of individual programs and the necessary funds therefor. Who then does decide what funds shall be recommended to the Congress? The Bureau of the Budget. Has the Bureau of the Budget been vested with the authority to determine the requirements of national security? Is it competent to determine these requirements? Does it and can it coordinate those requirements? Does it follow the mandates laid down by the Congress?

We all recognize or should recognize the need for governmental economy. Present demands, particularly for European recovery and national security, impose a heavy burden on all of us as taxpayers, and both definitely affect our national welfare. But can we afford not to provide for national security? If we do not, we may ultimately pay a heavier price than we care to contemplate. But we should provide for it intelligently giving due weight to the several elements to assure an effective result at minimum cost.

The budget message sharply limits new merchant ship construction and cites three reasons, viz., present scarcity of steel, the large surplus of war built tonnage, and uncertainties regarding the future economic requirements for shipping.

One cannot now help but hear an echo of the death of the liner program some eighteen months ago. But let us examine the reasons.

It is true that steel is in short supply at present, but any normal merchant shipbuilding program would require only a fraction of one percent of our annual steel production, and we are exporting, and it is proposed to continue to export, a substantial amount to Europe, which, while it may not be utilized for shipbuilding directly, operates to release foreign steel production to build modern ships to compete for our foreign trade. I, for one, am not naive enough to believe that foreign maritime nations will curtail their shipbuilding in consideration of our transfer of war built ships to them as contemplated in the European Recovery Program. Even the report of the President's committe on foreign aid (Harriman), while recommending the transfer of American-flag ships abroad, concludes that, if there is no curtailment of foreign shipbuilding, there should be no further sales of dry cargo ships abroad. It states that "The United

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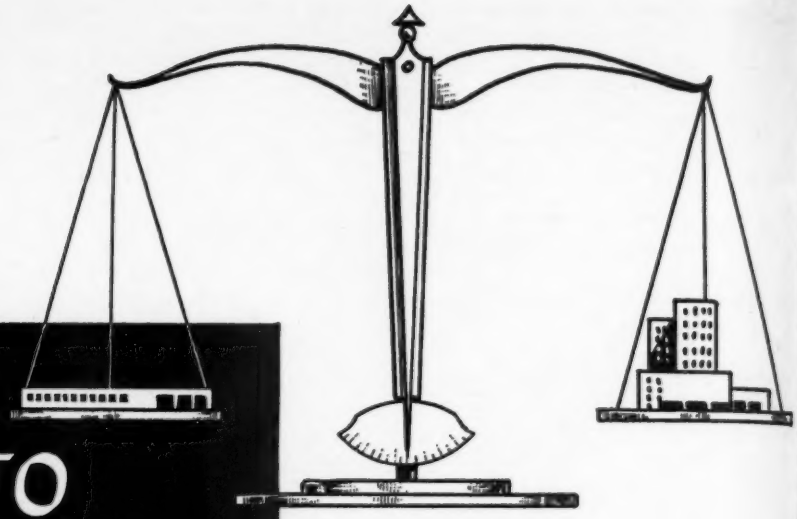

THE TREND TO ONE-STORIED WAREHOUSES

A discussion of the relative merits and construction costs of one- and multi-storied warehouses . . . Except for minor and temporary declines, a substantial overall reduction in the cost of building is viewed as altogether unlikely.

By
COL. CLARK C. WRIGHT
Carr & Wright, Inc.

and
JOHN P. H. PERRY
Vice President
Turner Construction Co.

THE term "warehouses" covers such a broad field that it is difficult to say there is a definite trend over the entire field toward one story warehouse buildings. Warehouses may be for general storage—storage for furniture and household goods—cold storage, for special uses, for mail order houses, for port terminals or parts of industrial plants of many types. There is no doubt that in the last decade there have been more one story warehouses built than in the preceding half century but whether there have been more one story warehouses than multi-story warehouses built is unanswerable though our guess is in favor of the predominance of one story structures.

The more we analyze the use for which warehouse buildings are designed the more inescapable is our conclusion that there is no categorical answer as to whether a warehouse building should be one story or multi-story. The answer can come only after full consideration of the factors entering into the problem. This paper in part attempts analysis of these factors as we see them.

Using the past as a guide to the future is generally sound and we have therefore approached our analysis by studying the one story warehouses which have been built to see what purposes they were designed to serve and what design, operation and cost elements were involved or can be deduced therefrom.

Among the factors which have stimulated these one story buildings are the following:

(a) The particular type of service in the way of merchandise handling which is a requirement of the service for which the building is intended.

(b) A situation where high story heights are desirable to permit high stacking of merchandise and where loads may be excessively heavy and the main floor is on solid ground or satisfactory fill.

(c) Where a definite requirement exists for rapid in and out handling of merchandise.

(d) Where unusually large railroad platform areas

Part of an address delivered at the recent Atlantic City convention of the American Warehousemen's Assn.

and trucking platforms are deemed advisable.

(e) The development and perfection of modern equipment for horizontal handling of merchandise including tractors, trailers, stacking devices, conveyors, etc., has contributed a great deal to the development of one story type of warehouse building.

The general question as to whether a warehouse should be one story or multi-story may rest on the following considerations:

1. GROUND VALUES. If the business to be housed is of such a nature that the warehouse must be located on city property of relatively high value a multi-story building may be indicated. If on the other hand it is located where property values are low and large areas are available, a one story building may be the answer provided it fits the purpose which it serves.

2. Selection of the site in turn will doubtless depend largely on the proximity to railroad siding facilities and the relation of the areas which must be served by truck transportation.

Let us assume that conditions are such that the warehouseman has a free choice as to location, namely that he has sites available for both types of structure and that either one will fulfill his requirements for services equally well. He is then confronted with the direct question as to which type of structure will best fit his program. In making his decision the following matters will be of prime importance:

(a) Cost of Construction.
(b) Maintenance Cost.
(c) Operating Costs.

Let's analyze each of these in turn.

COST OF CONSTRUCTION. As a general rule foundation and roofing costs will be relatively higher in one story buildings. Cost of heating and plumbing and occasionally of electrical installations will be higher by reason of long horizontal runs. Local ordinances as to maximum allowable open areas and required fire walls will affect costs. Special ventilation of large areas may be required to meet city codes. Conformation of site and character of soil are factors. It is difficult to compare the cost of the construction of one story and multi-story storage buildings for the reason that the former are usually built fire-resistant whereas the multi-story buildings are fireproof.

MAINTENANCE COST. Roof maintenance of one story buildings may be high if exterior parapets and fire wall parapets are involved (as is the case in general where building codes have jurisdiction) in which case troubles with roofing and metal flashings are multiplied. If skylights or monitors are desirable for light and ventilation added maintenance costs are involved. Large numbers of platform doors and possibly bumper doors in colder climates may be a requirement with attendant maintenance cost.

OPERATING COSTS. The difference, if any, in operating costs as between one story and multi-story buildings warrants most careful consideration as operating costs are a continuing burden whereas first cost of the building may be written off once and for all. Initial investment in trucks, tractors, stacking devices, conveyors and other equipment required by a one story building should be balanced against the complete cost of elevator installation and of other items of operating equipment that may be desirable in a multi-story building. In the same manner exact comparison must be made of the operating and maintenance cost of both types of equipment. The cost of power for battery charging equipment and the maintenance cost of all mobile equipment must be balanced against power consumption and maintenance and operating costs of elevators together with the annual cost of operating personnel in both cases.

The conclusion that the foregoing comparisons warrant might perhaps be that a one story fireproof building suffers by comparison with a multi-story building due both to higher initial construction cost and larger maintenance costs. Even if we assume further that the operating costs are substantially the same, this conclusion may be entirely offset by other considerations of prime importance in connection with the character of the business to be accommodated.

Assume a warehouse in some locality serving a large chain of food stores. This immediately presupposes a rapid in and out movement, particularly with respect to perishable items. Branch stores must be served each day. Perishable goods are coming into the warehouse all through the day and the same night must be trucked to numberless stores throughout the district. In this specialized operation a one story warehouse building might very well be the logical solution inasmuch as it would doubtless provide for greater efficiency and speed of handling.

Warehouses handling general merchandise for department store chains may be handling a class of goods which must move rapidly from car to warehouse and thence to chain stores or for individual deliveries to customers. This may demand a maximum of railroad car receiving platforms and ample trucking platforms, all of which may lead logically toward a one story structure.

The type of operation may be such that the utmost flexibility of operation can be obtained in a one story building provided ordinances will permit single areas, say 200,000 sq. ft. The problem of departmental layout may be simplified with consequent speeding up of operation and reduction in operating costs. Higher ceiling heights in one story buildings permit higher stacking of merchandise and more efficient storage of long items which may be stacked on end. If the first floor bears on good soil or properly compacted fill exceptionally heavy loads may be carried—which is often very desirable.

The entire picture may change if the building is to be built for a concern whose business is general storage warehousing. In such a

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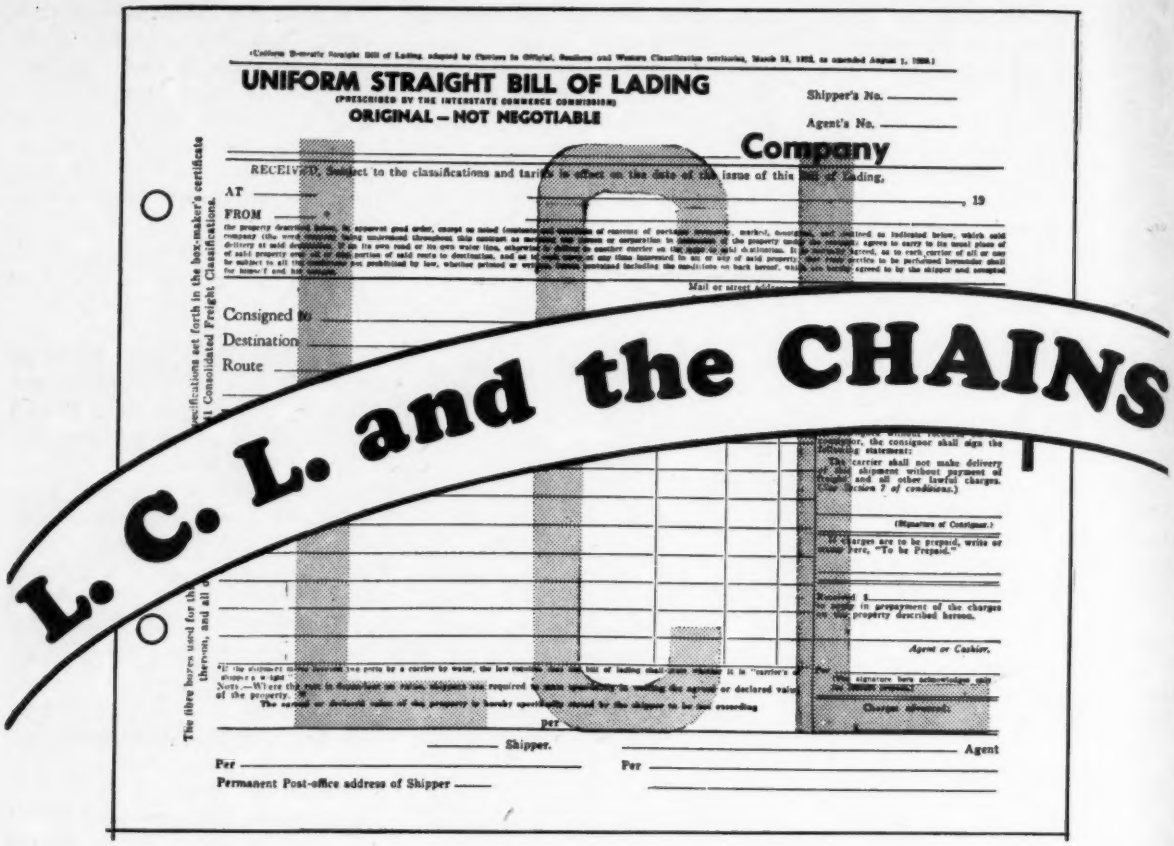
L. C. L. and the CHAINS



UNIFORM STRAIGHT BILL OF LADING

(PRESCRIBED BY THE INTERSTATE COMMERCE COMMISSION)

ORIGINAL — NOT NEGOTIABLE

Shipper's No. _____

Agent's No. _____

Company

RECEIVED, Subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading,

AT _____

FROM _____

, 19

Consigned to _____

Destination _____

Route _____

Mail or street address of consignee—For purposes of notification only.

The fibre boxes used for this shipment conform to the specifications set forth in the box-maker's certificate thereon, and all other requirements of Consolidated Freight Classification.

Shipper.

Per _____

Permanent Post-office address of Shipper _____

Agent

Per _____

Members of the Chain Store Traffic League, representing 43,000 retail stores, are seeking improved rail freight service, especially on l.c.l. shipments . . . Justification for this improvement, they maintain, lies in their increased freight bill for 1948, an estimated 397 million dollars.

By N. W. PUTNAM

President

Chain Store Traffic League

AT THE next annual meeting of the Chain Store Traffic League—to be held in New Orleans April 29 to May 1—traffic managers who represent 35 leading chain stores of the United States, which operate a total of 40 mail order houses, 300 warehouses and 43,000 retail stores, will discuss improved l.c.l. rail service—an important subject on the agenda.

Our members hope that the rail improvements which they have long sought will develop during the year of 1948. That is, we generally agree that our present most critical transportation bottleneck is in the rail distribution of packaged merchandise. Also, we believe that we are fully justified in requesting and expecting these l.c.l. rail improvements. This is because we estimate that our firms during 1948 will pay out a total of 397 million dollars for all transportation services, a vast proportion of which will go to the railroads; and this total will represent an increase during the year of 103 million dollars over our 1947 transportation bill.

This substantial increase of about 35 percent in our 1948 transportation bill will be due in no small part to the new l.c.l. rail increases which received recent ICC approval. In addition, the recent increases approved for the Railway Express Agency have had the practical effect of almost "pricing them out" of the merchandise transportation service now available to our members. Also, comparative rate increases by the motor carriers are expected soon; and at the time of this writing Congress is considering large possible increases applicable to near-in parcel post zones.

Considering this overall picture in the transportation of packaged merchandise, members of the Chain Store Traffic League feel well justified in seeking now to learn what specific rail "service improvements" they may expect to see put into effect soon, or at least ini-

tiated, in exchange for the enormous increases in their 1948 bill for railroad transportation.

During the past 10 years the Chain Store Traffic League has been active in the promotion of numerous merchandise transportation improvements. Many informal discussion meetings have been held with representatives of the leading rail carriers. For instance, six such regional meetings were held during the calendar years of 1946 and 1947 in Chicago, Dallas, and New York.

Some of the specific improvement problems then considered, and on which the League is still working, are the following:

1. Setup of railroad merchandise shipping departments.
2. Improved equipment for l.c.l. shipping.
3. Terminal improvements for l.c.l. handling.
4. More effective rail-shipper control of loss and damage.
5. Definition of relationship of rails to forwarders.
6. Coordination of rail and motor carrier services.
7. Publication of joint book of rail freight schedules.
8. Closer rail-shippers cooperation.

The League has long advocated the plan that each railroad system should establish a department to give special attention to the handling of l.c.l. merchandise shipping. This has been emphasized during the past two years by our use of the slogan: "Keep l.c.l. merchandise moving." Several railroads have already responded in part through the setup of active departments charged with this responsibility. There have been outstanding improvements by some of the systems, but in the total railroad service picture there are still numerous stumbling blocks.

This new executive setup of rail merchandise shipping departments which is being sought has been closely linked in some cases with definite handling improvements from the allotment by railroads of additional rolling and terminal freight equipment. A substantial change on some lines has been more cars made available for l.c.l. shipping, and the more regular routing of this equipment. Another such development has been more attention to "package car" systems. One of the leading national examples, in which numerous roads have cooperated, is package car routings out from Chicago. Other zone examples are scheduled cars to and from the New England States, and the coordinated truck and rail service that is now working out very satisfactorily in the Southwest. However, the "on time" record during the past two years for some of the package-car schedules has been very bad, and some of them have been steadily growing worse rather than better.

Some roads have been either experimenting with or increasing the numbers of their "overhead cars," bypassing the crowded terminals in such large cities as Chicago, New York, Philadelphia, St. Louis, etc.

League members have been questioning the wisdom of the continuation by the government of enforcement of certain wartime ODT orders pertaining to heavy loading of l.c.l. merchandise. They believe that the gain in more cars from such heavier loading often has been more than lost because of the evident large increases in loss and damage from such heavier loading. Also, the need for such loading has been lessened by improvements in the new car situation, compared with what it was when the ODT orders first went into effect.

A new l.c.l. handling experiment is reported being conducted by the Illinois Central road on their Chicago to Memphis run. This is the use of a demountable shipping container designed for cargoes of 15,000 to 20,000 lb. The container can be shifted from a special flat motor truck trailer to a rail flat car and vice versa. There is no doubt that such equipment would tend to reduce handling loss and damage hazards. But its use, of course, would also involve the question of the fairness of a reduced shipper tariff rate for such bulk handling.

Another desired rail service improvement is the need for more general cold-weather protection for such l.c.l. shipments as certain cosmetics, extracts, drugs, polishing compounds, etc. In general, the rails now provide good low-temperature protection for full-car shipments, and also good full-car refrigeration protection against excessive heat; and such heat and cold protection also is usually available for l.c.l. shipments on main rail lines. However, the rail service story is very different for most merchandise shipments that must be transferred from a main line to a side line for small-town delivery. On such shipments needing heat protection, the traffic manager usually must take a long chance and assume all risks during the four or five cold months in some rail shipping zones.

As to platform handling, many rail terminals literally have made no substantial improvements in twenty years or more, and this includes some of the largest terminals. League members, usually working in cooperation with local shipper groups, often have helped to make surveys of available local terminal facilities for l.c.l. shipping and to make constructive improvement suggestions. One type of handling improvement made at some terminals is the use of floor "chore boys" with three-wheeled gas powered vehicles, from which have come reported example increases of 25 percent or more in gang labor and freight handling capacity. Some rail freight houses recently have been double-crewed for the first time. Also, there is increasing use of platform pallets and fork lifts.

To aid in floor clearing at terminals, one suggested plan is to have a contract cartage firm handle all l.c.l. deliveries. There are reports that some rail lines recently have been making only one or two shipper freight deliveries per week, thus undoubtedly intensifying their congestion of freight at terminals. In defense of cartage delays, railroads mention the shortened work week at many industrial plants. Rails also argue that they could speed shipper services if au-

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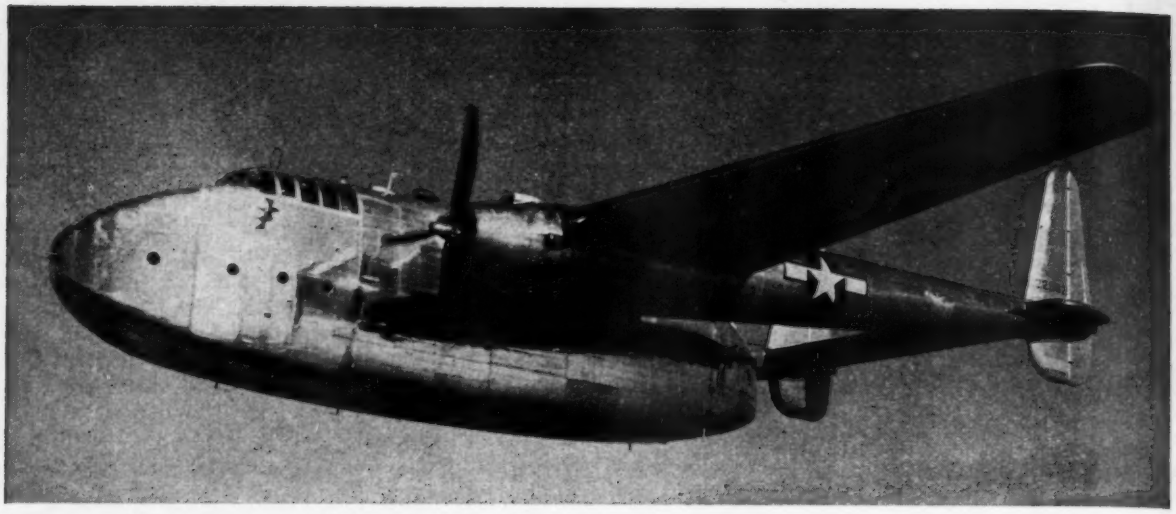


The Fairchild Packet, thought for a time by many to be the answer to commercial air cargo transportation.

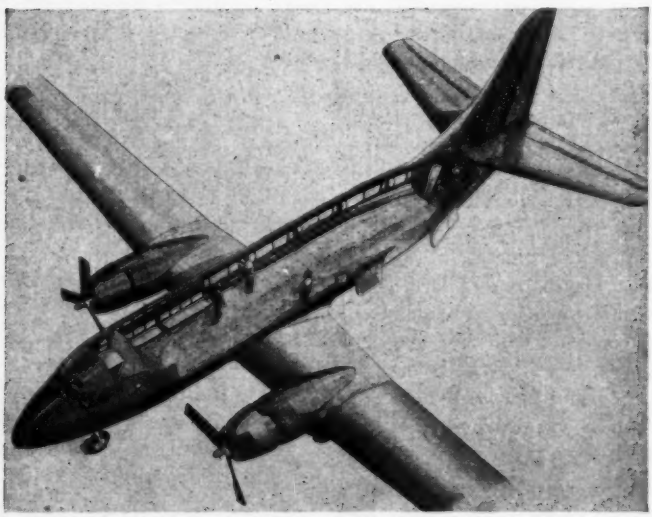
CARGO PLANE DESIGN

Air transportation's biggest need is a plane designed specifically for commercial air cargo . . . Planes have been converted, planes have been designed for military cargo use, but no manufacturer has as yet come up with a wholly satisfactory all-cargo plane.

By JOHN H. FREDERICK

Air Cargo Consultant

The Martin 2-0-2, a passenger type plane which can be modified for cargo with a possible payload of five and a half tons. Note the large cargo door, 6 x 8 ft.



A NEW TYPE of plane, designed for cargo, is believed to be one of the chief technical needs in air transportation today. No commercial carrier of air cargo is as yet operating a plane designed strictly for that purpose, but all are agreed that such equipment is necessary before rates can be brought any lower than they now are and real cargo volume attained. This requirement of the cargo carriers has been compared to the necessity for a modern passenger plane that existed in the early 1930's, a need which the aircraft manufacturers and airlines met with such success that the volume of passenger traffic subsequently increased more than 6,000 percent in fifteen years. The same or greater increase is in prospect for air cargo if the right equipment can be put into use.

Cargo carriers have so far been forced to use planes designed primarily for passengers, altered somewhat to permit their use for cargo, or are confining their cargo transportation to what can be carried along with passengers, mail and express. With this type of equipment, a marked reduction in air cargo rates, below those now in

effect, cannot be anticipated, since the combined passenger and cargo planes will not much longer be able to serve due to differences in scheduling, loading and range requirements. Lower rates can only be achieved by the development, production and operation of planes designed specifically for cargo and nothing else.

Just what the strictly air cargo plane will look like and what its general characteristics will be is still uncertain. For a time it was thought that a commercial version of the war-time Fairchild Packet was the ideal, but this manufacturer decided to devote his facilities to producing military cargo planes and none have been available so far for commercial operation. Other manufacturers have modified versions of their passenger equipment under construction, such as the Boeing Stratofreighter, and still others have ideas, but no real cargo plane for commercial use is now being built and no firm plans exist for the introduction of any such equipment despite obvious economic and service advantages.

Whatever differences of opinion there may be as to details of design, plane manufacturers and cargo carriers are agreed that the cargo plane best adapted to traffic and other conditions expected to exist for at least the next five to ten years should not be too large. This is so despite the extensive analyses which have shown that the most rapid decrease of direct operating costs per cargo unit results from increase in plane weight carrying capacity. The agreement on planes of moderate size is based on a number of practical limitations which may be summarized as follows:

POWER. Even though individual aircraft engines have been more powerful in the last few years, such power increase has not lessened the need for multiple engines. More engines mean increased complexity of operation and maintenance which, in turn, requires the employment of more flight and ground personnel. It is thought, therefore, that any plane requiring more than eight engines would be uneconomical to operate for cargo.

AIRPORTS. Unless airports are developed much more rapidly in the immediate future, plane size will continue to be limited by runway lengths, hangaring space and other airport facilities. This is particularly true for cargo facilities, and in this connection it has been said that "you can buy every commercial cargo ground facility in use in the world today for the price of one passenger station or for the cost of the profound studies which have been devoted to our cargo problem."

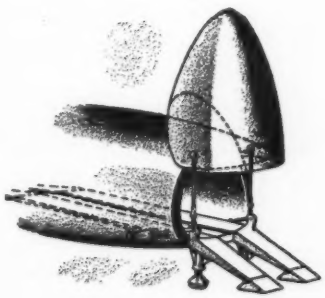
LOADING TIME. Cargo planes, as represented by their payload capacity, become too large when loading time begins to reduce the use of the plane in the air. Future air cargo will probably not change substantially in character from the present accumulation of individual shipments weighing on the average not more than several hundred pounds each. It might even be possible that, in the next few years, the average weight of a single shipment will decrease as more new traffic moves by air. It is the ambition of the carriers to obtain a plane that can be fully loaded with a typical cargo in one hour. This will mean multiple loading doors, truck-bed height floors, full end loading, rectangular cargo compartments, specialized cargo handling equipment, palletized loading, fuselage compartmentation, and various forms of semi-automatic loading and unloading. But even with these features the total loading and unloading time must be watched so that it does not increase beyond the economical limit as payload is further increased.

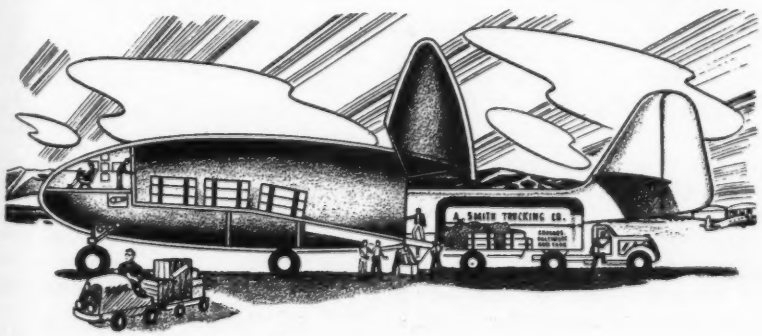
TYPES OF CARGO. An additional size factor in cargo plane design is concerned with handling certain heavy and large shipments, principally large vehicles and other heavy machinery. Although normal air traffic may not involve these items to any great extent, the size, dimensions and arrangement of cargo planes should provide for carrying this type of shipment under emergency or other special conditions. Thus a high degree of convertibility must be designed into all commercial cargo planes in order to make them of full value in an emergency. Emphasis on convertibility or adaptability to military use may result

(*Continued on Page* 54)

All-Cargo Plane Design

Aircargo needs planes designed to facilitate handling . . . Nearly six years ago, when commercial air shipments were confined almost entirely to air express, this publication foresaw the present day's need for efficient all-cargo planes and then recommended as a basic design requirement that the tail be raised because a level floor is essential to efficient loading, stowing and tiering . . . This sketch, one of many ideas evolved from time to time by plane designers in recognition of the growing need for an all-cargo plane, defeats the purpose of the raised tail.





PREVENTIVE MAINTENANCE

A discussion of the factors that determine the proper intervals between preventive maintenance procedures.

By W. J. CUMMINGS
Field Service Manager
The White Motor Co.

IN THE commercial field, preventive maintenance and replacement and repair are considered two separate functions. In the broad sense they are both maintenance and would normally be treated as such, but because commercially we sell both labor for P. M.'s, which we call contract or straight maintenance and labor for a combination of P. M. and repairs, which we call guaranteed maintenance, we must separate them very definitely. Of greater importance, however, to the selection of proper intervals between P. M. operations, we divide our preventive maintenance steps or inspection periods into five distinct groups, depending on the life expectancy of adjustment and tightening procedures in each group. In the advanced plan, that of guaranteed maintenance, we also assume the obligation to include repairs, by setting a definite date for the exchange of units or the replacement of specific parts.

It can be readily understood that in the first instance we must confine our labor hours to the preventive maintenance (P.M.) steps for which we contracted and for which we will be paid; and in the second instance we must accurately gauge the intervals of the P. M. procedures to assure anticipated life and avoid building up the repair hours beyond that which was originally estimated.

Both steps, however, provide a starting point from which we eventually can control the extent of our service and provide the most economical P. M. schedule possible.

While admittedly the acceptance of the principles of P. M. by the fleet maintenance group assume equal proportions to those of the commercial service group, there still exists in the owner group the misconception that a P. M. schedule is an arbitrary program and may not be wholly desirable. To us the all-important factors in any P. M. scheme are proper timing, and flexibility, which requires a record of replacement and repair. We believe this record can be accumulated readily by the positive separation of P. M. and replacement functions; also, that dividing all P. M. procedures into as many risk groups as possible is necessary to a flexible maintenance plan.

In performing P. M.'s in the fleet there is no necessity for distinguishing between P. M. and replacement; as a matter of fact they are both rightfully considered maintenance since they are paid for from the same bank account. Under such circumstances the time to perform repairs or replacement is at the time the P. M.

(*Continued on Page* 74)

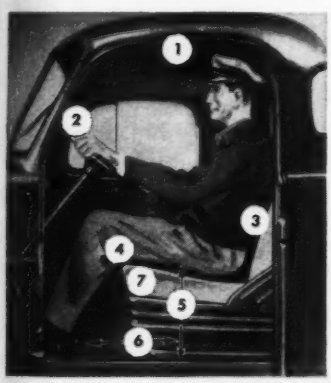
Part of an address delivered before the annual meeting of the Society of Automotive Engrs. at Detroit.

Only Dodge gives so much

VISION...

New Dodge "Pilot-House" cabs give you nearly 200 square inches more windshield area than other standard truck cabs! You get tremendously increased vision . . . in *all* directions. Windshields and windows are higher and wider. Available are new rear quarter windows that add still more to vision, and to safety . . . and vent wings on the door windows for controlled ventilation.

COMFORT...



Comfort? Riding is believing! New and *better* weight distribution, wider tread axles and longer springs give a marvelous new "cushioned ride." "Air-O-Ride" seats give the kind of seat cushion you want—"soft," "medium," or "firm," controlled by a convenient lever. Seven full inches of seat adjustment provide exactly the right legroom. *All-season* comfort is yours, too, with "All-Weather Ventilation," an ingenious combination of truck heater, defroster vents, vent wings, and fresh air intake.

1 **PLENTY OF HEADROOM**

2 **STEERING WHEEL**
right in the driver's lap.

3 **NATURAL BACK SUPPORT**
. . . adjustable for maximum comfort.

4 **PROPER LEG SUPPORT**
. . . under the knees where you need it.

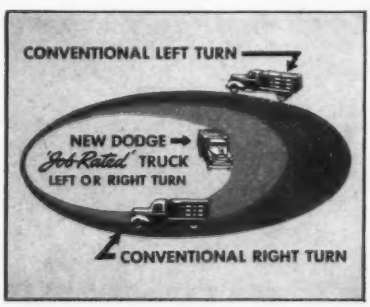
5 **CHAIR-HEIGHT SEATS**
. . . just like you have at home.

6 **7-INCH SEAT ADJUSTMENT**
. . . with safe, convenient hand control.

7 **"AIR-O-RIDE" CUSHIONS** . . . adjustable to weight of driver and road conditions.

EASE OF HANDLING

You can turn these new "*Job-Rated*" trucks in much smaller circles. You can park, back into alleys or up to loading platforms with much greater ease. This is due to a new type of steering design, with shorter wheelbases, that accommodate full-size bodies. You get much better weight distribution, too. Front axles have been moved back and engines forward, placing more weight on the front axle.



You get a truck that fits *your* job—saves *you* money . . . because every unit of every Dodge truck, from engine to rear axle, is "*Job-Rated*" for economy, dependability, performance, and long life. And remember . . .

only Dodge builds "Job-Rated" trucks!

NEW DODGE "Job-Rated" TRUCKS

FIT THE JOB . . . LAST LONGER

FREIGHT RATES BASED ON VALUATION

Jack McCormack, free lance traffic manager, discourses on a not too well understood subject . . . the meaning of the terms "actual value" and "released value" as applied to freight rates.

By HENRY G. ELWELL

Traffic Consultant

JACK McCORMACK, free-lance traffic manager, stood at his office window looking out at the rain-swept yard of the Western Mfg. Company's factory. Fred Clark, sales manager of the company, entered and exclaimed: "What a day, Jack! Seems as if the rain will never stop. But I didn't come here to talk about the weather. Recently I read an article in which reference was made to 'actual value' and 'released value' freight rates. I'd like you to give me an explanation."

"Fred, you've raised a very interesting issue. In fact, it's a subject not generally fully understood by the majority of shippers. Let's first consider the actual value rates. Actual value rates are rates, the application of which is dependent upon the actual value of the commodity not exceeding a specified amount."[1]

"Do the articles shipped under actual or released valuation make up the larger portion of shipments by rail or truck?"

"No," replied McCormack. "While there are numerous products listed in the railroad and motor truck freight classification under these categories, on the whole they are comparatively few. However, it should be noted that the number of shippers in the United States whose commodities move at actual or released rates make up a large total. And these shippers cannot ignore the carriers' tariff requirements."

"What sort of products are shipped under actual-value classification ratings?" Clark questioned.

"Well," explained McCormack, "among others are to be found field glasses; certain types of glassware, such as tumblers, vases, or decorated jars; wool waste, and carbon paper. It's interesting to find that a lesser number of articles move on actual-value rates than those on released value rates.

(*Continued on Page* 82)

Author's Note: Names of persons and company are fictitious.

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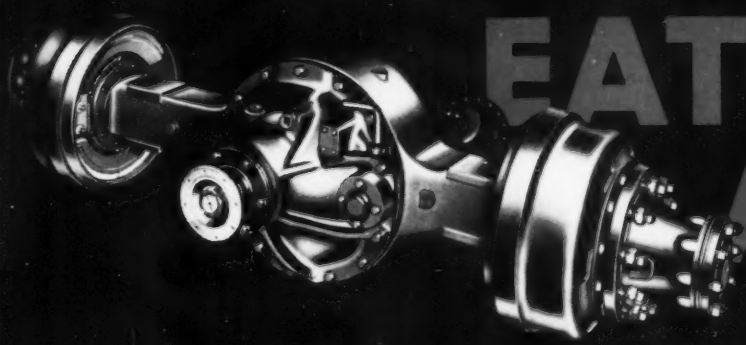

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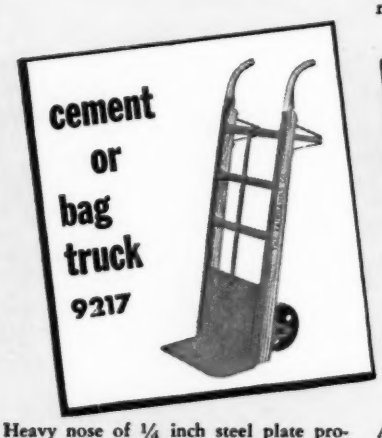

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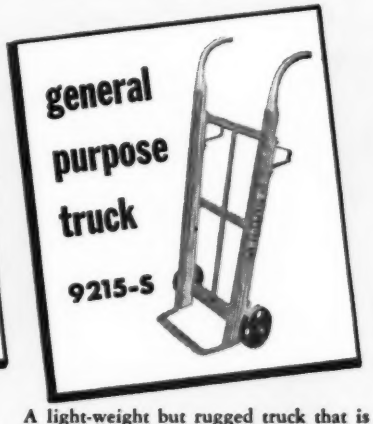

A light-weight but rugged truck that is ideal for a variety of uses in handling small lot merchandise. For stores, light manufacturing or delivery service. Steam-bent or straight handles. Length 46″.

American industry rolls on fairbanks trucks

These air express packages bound for London and Copenhagen symbolize the large amount of air traffic between this country and the rest of the world, now handled largely by freight forwarders.

International Air Express

Certain international airlines and the Railway Express Agency have cancelled their foreign pick-up and delivery agreements . . . Air express will be handled by freight forwarders, who will be raised from their hitherto supplementary position.

By JOHN H. FREDERICK

Air Cargo Consultant

THE RECENT action of certain international airlines in cancelling their pick-up and delivery agreement with Railway Express Agency for foreign shipments has caused some misunderstanding. Some have regarded it as the first airline move toward cancelling all arrangements with REA for domestic as well as foreign pick-up and delivery. It is, therefore, a good time to set the record straight for the benefit of all concerned.

What has actually happened is this: Last fall the various members of the International Air Transport Assn., to which all the major airlines of the world belong, adopted a new set of rules concerning sales of their cargo services through "agents." These rules provided that "sales agents" would thereafter be limited to a five percent commission on the published air cargo rates on international shipments. Railway Express Agency was chiefly affected as it has been by far the largest international cargo "sales agent."

The adoption of the new rules was the result of a series of meetings between the airlines and REA. The latter contended that the five percent commission was acceptable to it only if there was also a guaranteed minimum of one dollar per shipment. They said that the commission on at least two-thirds of all overseas air shipments would be less than a dollar each and that their costs for collecting charges, accounting work, pick-up and delivery and the like remained constant no matter what the actual cost of the shipping service might be. The airlines, on the other hand, contended that the five percent commission was considered adequate by IATA and that they, therefore, must abide by it.

In the middle of February, both REA and the airlines concerned announced that the international air express agreement between them would be cancelled on March 1. This had been preceded by a 90-day notice of cancellation of the old agreement as between the airlines and REA and the request on the part of the carriers for a new agreement on the new terms which REA had refused.

The results of the change are: (1) REA will no longer handle international air express shipments for most of the major international airlines, which include: Pan American World Airways, American Airlines, American Overseas Airlines, Braniff International Airways, Eastern Airlines, Linea Aeropostal Venezolana, Northwest Airlines and Philippines Airlines. REA keeps

(*Continued on Page* 67)

SERVICING HANDLING EQUIPMENT

(*Continued from Page 27*)

little or no maintenance occurs. Machines are not even properly lubricated in accordance with the service manuals provided by manufacturers.

This brings us to the all-important question: who should pay for the maintenance of such handling equipment and what should the charges be? Neither the manufacturer nor the distributor can afford to give maintenance service without charge. Therefore, we feel it advisable to suggest what, in our opinion, are fair and reasonable charges.

In the automobile field, certain definite charges have been established on a job rate basis. The customer brings the machine to the automobile dealer's shop and the work is done under a standard procedure, which is repeated day after day. Automobile servicing is often used as a criterion of what could be done in the case of handling equipment. There is no justifiable basis for comparison, however, because materials handling equipment is handled by manufacturers and distributors over a wider area than is automotive equipment. Sufficient experience has not yet been accumulated, and it is questionable whether it ever will be, to establish job rates, because every maintenance job is different, not only in respect to the equipment itself, but in respect to widely varying operating conditions.

Since it is impossible for the user of the equipment to bring his unit to the nearest service station except for a major overhaul, it is necessary for the materials handling maintenance service company to send men on the road to perform this service. The situation is comparable to the servicing undertaken by refrigerator and appliance companies. However, service and appliance firms work generally in restricted areas. Hence a flat charge, based on uniform operations, is possible.

The materials handling equipment service company, however, would find every job different. Personnel must be skilled mechanics, conversant with the machines to be serviced. These men must travel long distances; therefore, it is essential that the customer be charged for traveling time and expense. Traveling time starts when the service man leaves the service station and ends when he returns. If it is necessary to start before the hours of the working day, generally 8 a.m. to 5 p.m., or to travel after 5 p.m., it will be necessary in most instances for the service company to pay time and a half over the 40-hr. week. This is a requirement of the wage and hour law, hence this overtime charge must be passed on to the user or owner of the handling equipment. In order to maintain a sufficient staff of repair men, there will be times when the men will be in the home station without sufficient work to do. The charge for a service man's time should take this fact into consideration. Under an OPA ruling, $2.75 an hour was the average rate for this type of work. Since this ruling, however, costs have risen so that today it is necessary to charge for this service $3.25 an hour.

In addition to the hourly rate charge, there are charges for parts. Also there is the expense of hotel accommodations, which should be charged against the equipment user when a service man remains on the road overnight.

Sometimes a machine can be brought into a service station for an overhaul. When a service company uses its own truck, there should be compensation. Otherwise the customer should deliver it and pick it up after repair with his own truck or by means of a regular transportation company. If it is possible for the service company to rent machines to be used by customers while trucks are being repaired, they should be charged on a per diem basis. In the case of small units, the charge should average about ten dollars a day, on medium size units $20 a day, on larger units between $30 and $50 a day, depending on the actual size of such unit. Where a renter is desired, the charge should be about $25 a day for the small units, $45 a day for the medium size units, and from $60 to $75 a day for the larger units. The customer should be required to carry and pay for insurance on all rented or substituted machines to protect the service company against damage, lawsuits, accidents, etc.

All the above charges allow for a margin of profit for manufacturer or distributor. It is necessary for him to make a profit, the same as any other repair company or service firm makes a profit, if he is to stay in business and perform efficiently.

In selling a unit for the original installation, both the manufacturer and the distributor assume, and have the right to assume, that the purchaser is capable of maintaining his own unit. If the purchaser does not have facilities for such maintenance, he must pay for the service when required.

In many instances this work could be done by local mechanics who are willing to become conversant with this type of equipment. This would reduce traveling expenses and the time consumed in getting from the service home station to the customer's plant. Unfortunately, however, the demand for this type of maintenance and repair in local shops has not been sufficient to justify the training of mechanics for this work.

Consequently, users of materials handling equipment are looking to the distributors and manufacturers for maintenance and repair service, and naturally they should be willing to pay for such service, particularly in view of the fact that most handling equipment is so valuable in the saving of time, space and money that it pays for itself over the period of a year. Materials handling equipment performs more work than other equipment in the plant, and the money required to keep it operating efficiently should not be begrudged.

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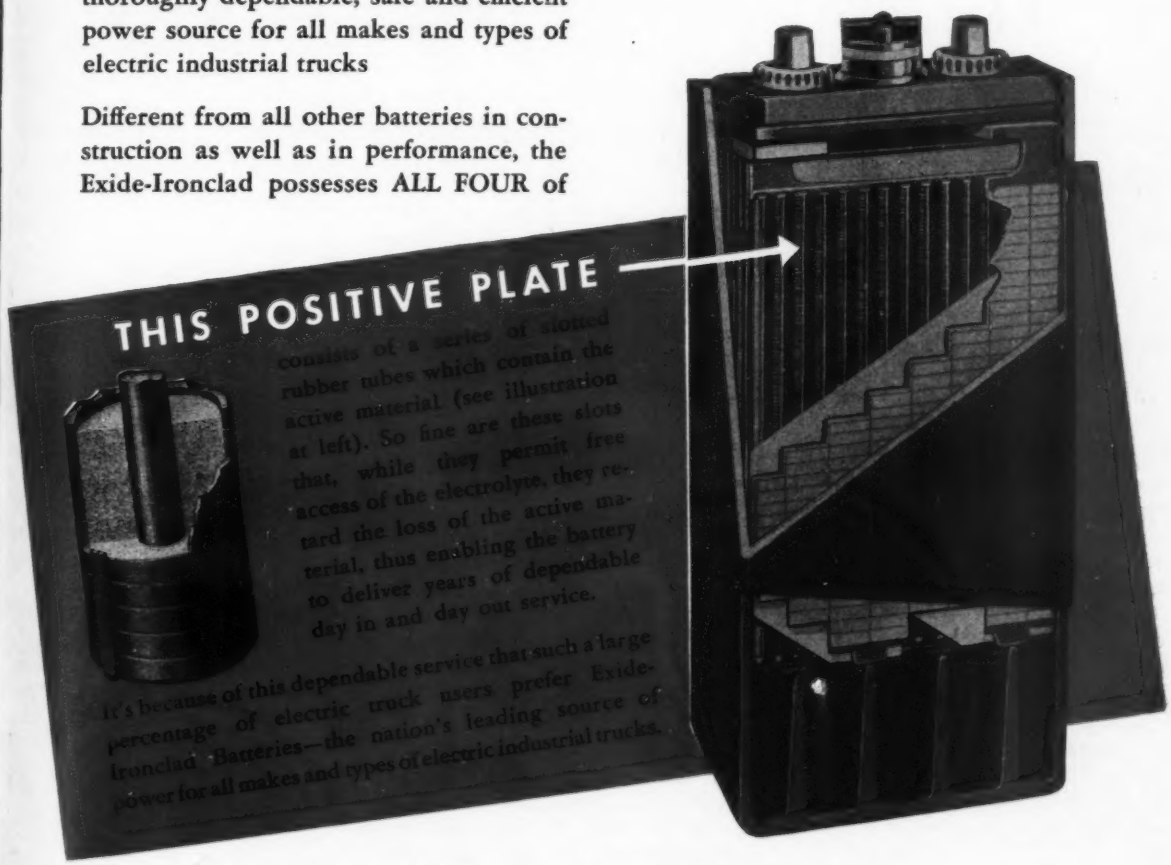
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consists of a series of slotted rubber tubes which contain the active material (see illustration at left). So fine are these slots that, while they permit free access of the electrolyte, they retard the loss of the active material, thus enabling the battery to deliver years of dependable day in and day out service.
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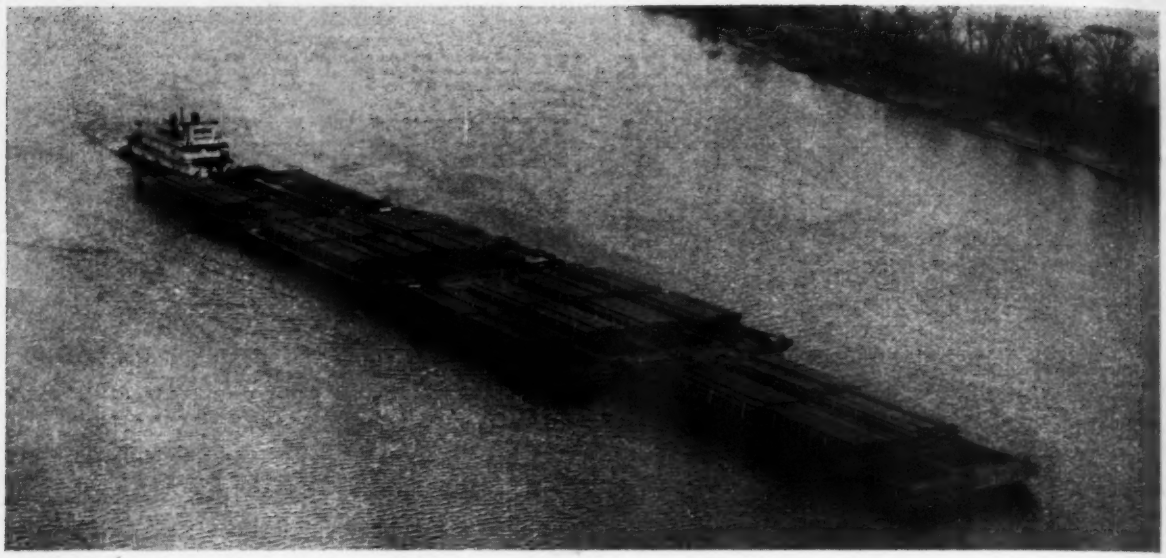

Barge Shipping Today

High operating costs and rate inequalities continue to pose a problem in barge operation . . . In this article, Mr. Kruckman discusses pending legislation calling for the sale of the Federal Barge Lines to private operators and the position of the shippers who want Federal's present service guaranteed.

By ARNOLD KRUCKMAN
Washington Correspondent

THE grand-daddy of all ICC hearings is officially known as Docket No. 26712. It is the classic which began 14 years ago and apparently is still strong and husky. It's the old, old fight by the barge lines to secure rate equality with the railroads. They had another two-day sparring match in Washington in the middle of March. So far as is presently known the end is not in sight. It is expected the barge lines may get some minor adjustments; but the major issues are not expected yet to be touched.

The barge lines persistently stick to their original thesis: they say they must give up the greater part of their freight receipts to the railroads. They say they might be able to compete fairly if they were placed on a parity with the railroads as the railroads are placed on a parity with each other. The hearings brought out from the barge lines that it was less costly to operate in the past; they asserted terminal and crew charges have gone up sharply, and that they expect greater increases in costs with the labor and material prospects ahead. Much emphasis was placed on the demand of the railroads that all-rail and rail-barge rates should be identical.

It was brought out that there are 50 common carrier barge lines, and 225 contract barge carriers, under private ownership. There appears to be some fear, at least for the ICC record, that there is danger the existing barge business may be largely destroyed. This apprehension appears to stem from their concern over rates and over the operation of the Federal Barge Lines. It is not easy to understand the complexities of the barge economy. In addition to the common carriers and the contract carriers, there are also the private carriers and the exempt carriers. The common carriers and the contract carriers are subject to ICC rate regulation. The first type operates a rate structure that applies between ports. The second contracts to carry cargo in specific classifications for specific customers. The private carriers are those who operate barges to transport their own products, and the exempt carrier is the operator who apparently does not consider that he comes under any rate regulation.

The Federal Barge Lines, which are the flies in the ointment of both the railroads and the other barge lines, is the really great and pervasive institution which came into existence 24 years ago as an adjunct of the federal government.

(*Continued on Page* 56)

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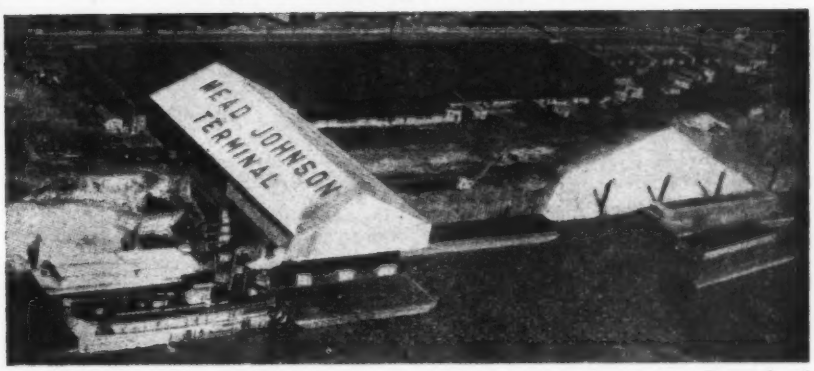

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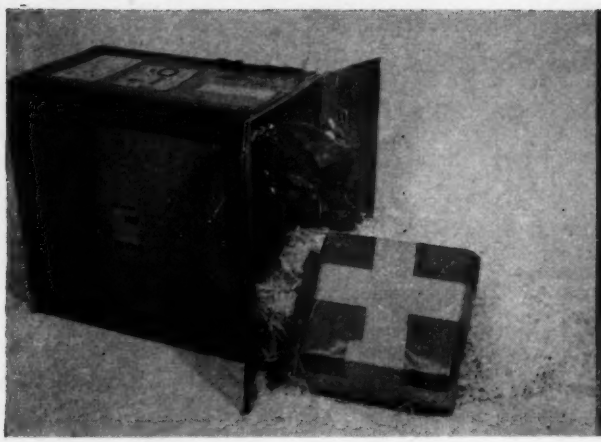


Example of consolidated "package within a package."

Small packages bound for same destination should be consolidated.

CONSOLIDATED SHIPMENTS REDUCE COSTS

The individual shipment of many small units of freight is wasting millions of dollars annually . . . Numerous small shipments intended for a single destination should be consolidated into one or a few large shipments. In this article, Major Saperstein outlines a "small freight" consolidation program.

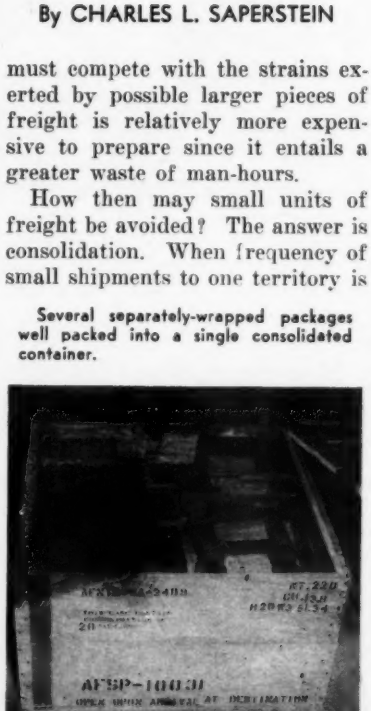
By CHARLES L. SAPERSTEIN

THE ideal objective in handling small items of freight is not to do so. This observation is not so enigmatic when it is pointed out that literally millions of dollars in transportation costs are wasted annually through single routing of small units of freight, which by proper planning could be avoided.

A small package takes just as much paper work, billing, recordkeeping, follow-through and overhead office costs as one weighing a hundred times more. The carrier also has more concern and difficulties with small parcels and is therefore forced to impose considerably higher rates per pound. Further, the chances of a small package becoming lost or damaged are greater. It is the smaller consignments which engender most tracing investigations, damage claims and after-correspondence. Finally, a small package that must compete with the strains exerted by possible larger pieces of freight is relatively more expensive to prepare since it entails a greater waste of man-hours.

How then may small units of freight be avoided? The answer is consolidation. When frequency of small shipments to one territory is noted, then it is time to consider consolidation of distribution through maintaining sufficient inventory with a local distributor or public warehouse to whom sizable shipment could be economically made. If this is not practical, then consideration should be given to grouping smaller outgoing parcels so that two or more to the same destination can be consolidated and sent as one. If this also is not feasible in an operation, then consolidation should be sought with the smaller freight of other shippers through the facilities of commercial consolidating forwarders in the express, l.c.l., motor, air and export fields.

Several separately-wrapped packages well packed into a single consolidated container.



Many feel they are already adhering to this principle—for commercial consolidation is today big business. Several concerns in the rail consolidated field are so large and so active that their customers have to remind themselves con-

stantly that these people do not themselves own and operate a network of railroads blanketing the country. The basis of their ability to consolidate lies in the fact that the carriers can quote lower rates on sizable shipments or on a carlot than on individual small shipments. This represents a substantial saving, part of which can be passed back to the shipper. This is true irrespective of the mode of transportation used. The traffic man who finds his shipment will cost $12 if given to the carrier, but only $9 if handled through a consolidated forwarder naturally will use the latter.

It is therefore possible that many who are now routing freight through consolidating organizations are prompted to do so because of lower freight charges rather than because of a desire to avoid the bane and waste of preparing and handling small shipments. The scope of the evil often is not realized because it consists of so many separate parts that it is seldom viewed collectively.

A real working program to avoid a steady stream of small packages must permeate an entire organization. To be successful, each department, branch or office must cooperate and packages, and shipping instructions, for various destinations, segregated. It is advisable to have a definitely designated receiving station within the shipping facility to receive all small units. A procedure of holding back and accumulating small cargo for regular destinations for the purpose of grouping as many packages as possible in a single outer container, should be adopted. The success of a coordinated program of consolidating small packages will hinge on showing all concerned that the procedure is worthwhile even in the case of seemingly trivial shipments. Here is why.

In the course of a day a typical headquarters organization may start small shipments to the same branch installation as follows: (1) to the merchandise stock room, three or four separate small parcels each containing some inventory fill-in that has been requested; (2) to the advertising department, first a package of window posters, later, a supply of blotters; (3) to the engineering department, a small box with a replacement part, a package of washers and finally a six-pound issue of a hardware catalog; (4) to the sales department, samples; (5) to the merchandising manager, a demonstration kit; (6) to the chief accountant, a box of vouchers; (7) to the treasurer, a quantity of the quarterly report; (8) to stationery supplies, a few pads of one form or another; (9) to the traffic department, some traffic replacements—and so on through a list of other demands for small units of freight, all from one point of origin to the same destination.

This is not an exaggerated example, but is a typical picture which might be found in hundreds of activities each business day. Thus, a whole segment of the traffic and shipping departments becomes plagued by the endless stream of small shipments made the more difficult because each is an unusual handling that is spotlighted by the attentive interest of the originating source. Beyond the area of the shipper's plant, freight terminals, warehouses and carriers are further plagued by the uneconomical load of small, miscellaneous freight.

To implement a program for increasing consolidation at the source and reduce the number of individual small shipments, several steps are necessary.

First, someone in the traffic or shipping department is given responsibility for handling all small outgoing freight. Depending upon the nature of the activity, an understanding is necessary as to what constitutes "small freight"—everything up to 10 lb., 25 lb., 50 lb., or some figure. Once "small freight" is interpreted by maximum weight, or even cubical dimensions, then all small packages without exception should be routed to the section responsible.

Second, a space must be provided for the small freight activity ample to permit segregation and accumulation by the more frequently used destinations. Where volume justifies it, more popular destinations should have delineated floor areas or receiving bins for accumulating incoming merchandise and parcels awaiting shipment.

Third, a program should be established covering frequency of moving out all freight. Such movements can be made daily. Or, consolidation may take place every other day, twice or once a week. In the case of export shipments, consolidation can be made when a boat is ready to sail.

Fourth, the small package activity will find it advisable to prepare consolidated manifests enumerating the contents of a consolidated case, one copy of which is mailed to the destination and another copy affixed to the case as a packing list. A third copy remains as a permanent record showing into what consolidated case and on what date a given small parcel was packed. If numbered consecutively, the number of the manifest may also be stenciled on the outer box as a case number for identification.

Fifth, facilities must be given the small package activity for packing and wrapping items, as well as for the boxing or crating of dissimilar small units for the same destination. Inner packages, protected by the outer box, do not have to be packed as securely as if being sent alone unless there is possibility that the recipient may have to send them onward to still a third address. Then it is advisable for the originating shipper to make a careful pack, for the chances are it will be forwarded exactly as received.

Of course, there always will be some single packages to go out, either because there is no freight for the same destination or because urgency requires their being handled as specials and not held for consolidation. With these, the small package room will prove the best activity for handling, having specialized in the treating and handling of small freight with view to getting it to destination in first-rate condition. In fact, there is a tendency among packers

(*Continued on Page* 85)

Fifty-ton Manitowac drag lines on floating derrick about to be hoisted onto ship. The floating derrick has a lifting capacity of 150 tons.

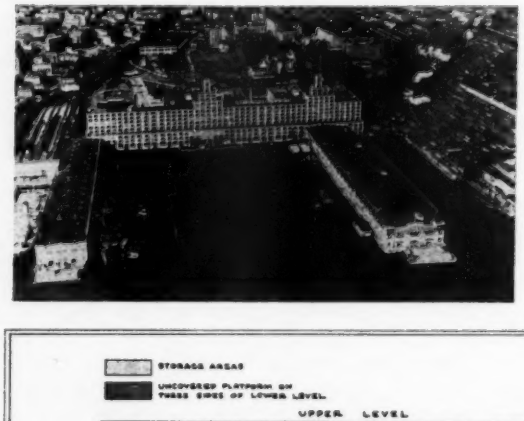
HANDLING MARINE CARGOES

High operating costs make the use of modern materials handling equipment and techniques a must in water transportation.

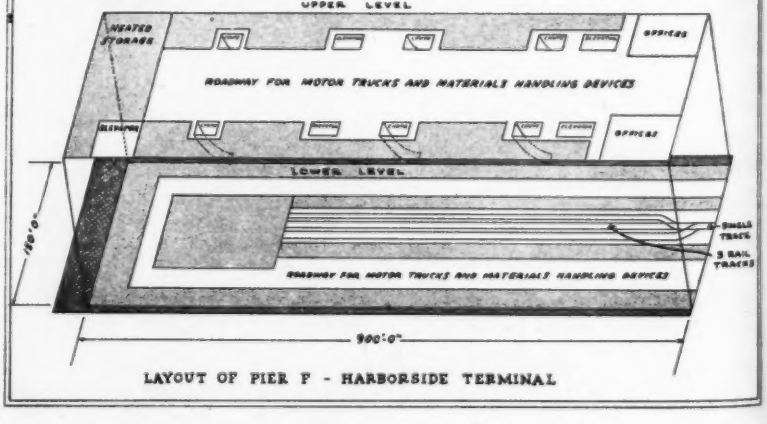
By R. J. BARSTOW

Special Correspondent

THE background of the American merchant marine is in the history books; its future is in the realm of conjecture. However, the possibility of future success can be judged to a great extent by the degree to which the merchant marine utilizes modern equipment and techniques to offset high operating costs. One of the measures of a progressive industry is its progress in materials handling. A food canner who utilizes new materials handling techniques is progressive; a machine shop that is ever improving its materials handling facilities is progressive. A ship line that is materials handling-conscious is likely to be progressive in other phases of its operation. Materials handling is actually one of the most important factors in the operation of an efficient merchant marine. Freighters are primarily tremendous materials handling and material moving devices. Docks, piers, lighters, floating derricks, and other harbor installations are also large scale materials handling facilities.



Aerial view of Harborside Terminal, Jersey City. Pier F, which is described in the article, is at the right.



LAYOUT OF PIER F - HARBORSIDE TERMINAL

Thus the future of the merchant marine can perhaps be evaluated to a considerable extent by examining the materials handling phase of the American merchant marine.

One of the component companies of our merchant marine is the American Export Lines with piers at Boston, New York, Philadelphia, Baltimore, Hampton Roads, and other North Atlantic harbors. This line carries American shipping to areas in the Mediterranean, Adriatic, Black Sea, Red Sea, and Indian Ocean. This is one of the fourteen American shipping lines operating under the provisions of the Merchant Marine Act of 1936. By visiting Pier F in the Harborside Terminal on the Jersey City Side of the Hudson, one of the seven piers in New York area operated by the American Export Lines, the operation of the new American merchant marine can be seen at first hand.

Tied to the foot of Pier F is a rusted but seaworthy Liberty ship; at the head of the pier is one of the sleeker, newer exporter type express freighters. On the other side of Pier F are two other boats, slightly smaller modified exporter type express freighters. The Liberty ship is one of the fifty such government-owned vessels operated by the American Export Lines. The exporter type is one of the ships designed and operated by the line under the Merchant Marine Act. The vessel has a deadweight of 9,900 tons and is 473 ft. long, 66 ft. moulded breadth, with a draft of 27 ft. when fully loaded. It has a maximum cruising range of 15,000 miles and a rated sea speed of 16½ knots. The vessel has seven holds with a total bale capacity of 535,750 cu. ft. Its 21 booms, able to handle loads up to 35 tons, are driven by electric-powered winches and controlled by two operators. These materials handling devices can load and unload simultaneously, if necessary all type of cargo under varying harbor conditions. This type of freighter, as well as the modified exporter type described below, has refrigerated compartments for shipping fruits, vegetables, and other perishables; special holds fitted with Cargocaire moisture and humidity controls for carrying cargoes subject to corrosion, rust, mildew, etc.; and four deep tanks with a total capacity of 850 tons to carry four different types of liquid cargo at one time.

The modified exporter type has a dead weight of 7,800 tons and is 420 ft. long, 60 ft. moulded breadth, with a draft of 27 ft. when fully loaded. Because of its smaller fuel-carrying capacity this type of freighter has a cruising range of 12,000 miles at a rated sea speed of 16½ knots. Its six holds can carry 407,500 cu. ft. of general cargo or 422,300 cu. ft. of grain cargo.

The American Export Lines is now operating thirteen of the exporter type freighters and four of the modified exporter type. With their great cruising range, their high speed, and their huge cargo spaces, vessels of the American Export Lines and other shipping lines can and are competing successfully with foreign lines. The modern ship is one phase of America's sea strength; the other, and equally as important, is terminal facilities. No other country is as admirably situated in this respect as is America. A good example of such facilities can be seen from an examination of Pier F. The pier has two levels, with three tracks running through the center of the lower level, with ramps and inside passageways for the largest motor trucks. In this huge structure enormous quantities of materials are handled daily. An average day's work is 7,500 tons in and out of boats; however, as many as 9,000 tons have been handled in one day. In this huge area of materials handling, four large freighters with a total of as many as thirty holds, three strings of freight cars, hundreds of floating lighters, and a constant flow of motor trucks are loaded and unloaded all at one time. To accomplish this tremendous materials handling undertaking, there are employed as many as 500 stevedores and materials handlers. Supplementing this huge force are crane cars, fork trucks, truck-tractors, live skids, hand trucks, and other materials handling devices. The complex operation of this pier is an example of sound materials handling on an enormous scale. The two main streams of material flows are from freighter to pier and from pier to freighter. Coordinated with these are many minor streams of materials movement in and out of lighters, freight cars, and motor trucks.

Requests for space on outbound ships are received in the New York offices of the American Export Lines. Space is granted and the shipper is notified when he can deliver his material to the pier. A shipper of steel will be granted an earlier date than a shipper of light cargo because steel will be placed as far below deck as possible and lighter cargo will be stored in upper sections of the hold. Assignment of locations in the ship's holds is a complex and important job. The plan clerk, the port captain, and the latter's assistants do this job on master planning sheets. Not only must the weight of the cargo be considered, but thought must also be given to scheduling receipt of materials at the pier so that the ship is loaded evenly. Freight destined for Beirut, must be so located in the hold that even if Beirut is the last port of call, there will be no need to shift the cargo when the ship unloads at Palerno, Piraeus, or Izmir. When the ship arrives in Beirut, the freight must be readily accessible despite the fact that new cargo may have been taken on at any of the above mentioned ports. After considering these and other factors, space in the hold for each piece of cargo is allocated on the master planning sheet.

When freight is received, it is unloaded and, on the basis of the planning sheet, placed on the pier as close as possible to the location on the ship to which it is assigned. Incoming freight is received at the pier in three ways:

1. Approximately 70 percent of all freight is received at the pier in lighters that were loaded at freight terminals or seaboard plants. The

(*Continued on Page* 86)

CARGO PLANE DESIGN

(*Continued from Page 39*)

in some compromise to commercial requirements and may rule out certain very specialized military uses. A good commercial cargo plane, however, can perform all but a very few kinds of military missions.

RANGE. The required range of a plane is fundamental in determining its overall size and weight. Necessary fuel loads for optimum economic operation generally exceed 50 percent of the payload itself in weight, and may actually equal the payload under some operating conditions. It is believed that two types of cargo planes as to range will be necessary to satisfy the full traffic demand. The medium range plane will be operated on an inter-city basis, carrying mail and a type of cargo similar to what we now call air express. It will probably have a capacity of 8 to 10 tons of payload and be designed for a range somewhere near 1,000 miles. The long range plane will probably carry a greater percentage of full plane loads, with payload capacity of 16 to 18 tons, and will be designed for non-stop transcontinental and over-ocean operation. This plane should be designed for a range of at least 2,500 miles for over-water operation, at a certain reduction in payload, and must be capable of making at least 1,500-mile trips non-stop with maximum payload for domestic operation.

SPEED. The transcontinental type of plane should be capable of attaining a speed to permit overnight deliveries between any two points in the United States, either non-stop or with but one stop, depending on the total distance. For this type, the most critical use is on the west-to-east transcontinental route where the change in time zones has an adverse effect on schedules. This will require average speeds from 250 to 300 miles per hour. Any further increase beyond such speeds is not considered necessary for the present, since they will permit round-trip transcontinental trips within a 24-hour period.

The cargo plane used in inter-city operation will be designed for shorter ranges and less payload. Because of the more localized nature of such operation, the necessity for high average speeds is not the same as for the transcontinental and overseas plane. However, since this smaller plane will undoubtedly have fewer engines than the larger, Civil Air Regulations will probably dictate design with speeds in excess of those required for operational considerations alone so that while 200 to 250 mph. would be adequate, average speeds of 250 to 300 mph. will probably be provided.

Whatever the size of the cargo planes that may be offered to operators, it is felt that they must provide interior volume no smaller than that corresponding to a cargo density of 6 lb. per cubic foot, which will allow plane-load transportation of all large volume categories of air cargo. The cargo floor must be level and at truck-bed and loading dock height; there must be several large-sized doors for rapid trans-loading as well as for efficient cargo handling; and the compartment should be essentially rectangular to allow storage and tie-down with a minimum of unusable space. Finally, the cargo space must be fitted with efficient heating and refrigeration equipment, with provision for segregation of types of cargo so that simultaneous heating and/or cooling are available for specified areas within the plane.

None of the planes presently available for air cargo transport meet the above requirements completely enough to achieve the basic objective of cargo transportation at the low rates necessary to develop the great potential volume available. A development program concentrated around the above design objectives and requirements will provide equipment capable of

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Commercial operators, the Air Force and the Ground Forces should work closely together to determine the final form to be taken by cargo planes and to make them interchangeable among all three. Any design compromise should be accepted by the military, since the first objective ought to be the production of paying cargo carriers which would find day-to-day employment on both domestic and international routes. In the past, there has been too much of a tendency to require that certain features be built rigidly into a military plane at the expense of any commercial user who might ultimately take it over. In any joint project, which seems the only answer to the expense of developing strictly cargo-type planes, the controlling idea should be to reduce built-in dead weight so that the commercial operator, the first user, can get the highest return possible in the normal use of the plane.

It has been held that this procedure would give us cargo planes designed primarily for commercial operation but quickly adaptable to military jobs. For example, it would be comparatively easy to design a floor structure that could be reinforced for special military loads when necessary and provision could be made for anchorages and tie-down facilities which might not be used in civilian commerce but which would be mandatory for the military usage to which the plane might later be put.

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This series of barges has tremendous cargo capacity, making possible low shipping charges.

BARGE SHIPPING

(*Continued from Page* 48)

It grew out of the mobilization of the transportation facilities of the nation during the first World War, when the government took over all barges and similar equipment.

All its barge transportation for carload and less than carload freight applies between all ports on the Mississippi between Minneapolis-St. Paul and New Orleans; on the Illinois between Chicago and its confluence with the Mississippi; and all intercoastal traffic via ocean lines through the Panama Canal to the Pacific Coast; on the Warrior and the Tombigbee Rivers between Birmingham and Mobile and New Orleans; and on the Missouri from its confluence with the Mississippi to Omaha.

Barge-rail rates apply between St. Louis and practically all ports on the Mississippi and Illinois Rivers north of St. Louis on one hand, and points in eastern New Mexico, Texas, Arkansas, Louisiana, and part of Oklahoma, and the states south of the Ohio and Potomac Rivers and east of the Mississippi River, on the other hand. Also, between St. Louis and other ports on the Mississippi south of St. Louis, such as Memphis and New Orleans, on one hand, and places in the states of North Dakota, Minnesota, Wisconsin, Iowa, Nebraska, Kansas, and Missouri, on the other hand; and between such ports as Memphis and New Orleans on one hand, and places in Illinois and the states east thereof, on the other hand.

Rail-barge-rail rates apply between places in the state of Illinois and all states east thereof north of the Ohio and Potomac Rivers all the way over to the Atlantic seaboard, including New England, on one hand, and the states of Arkansas, Louisiana, Oklahoma, Texas, and eastern New Mexico and some areas east of the Mississippi, on the other hand. Also, between places in the states south of the Ohio and Potomac Rivers and east of the Mississippi River, on one hand, and places in North Dakota, Minnesota, Wisconsin, Iowa, Nebraska, Kansas, and Missouri, on the other hand.

The terminals operated mainly by the Federal Barge Lines are located at Mobile, New Orleans, Baton Rouge, Vicksburg, Greenville, Port Birmingham, Helena, Memphis, Cairo, St. Louis, Peoria, Chicago, Burlington, Rock Island,

Small package containers consigned to Federal Barge Lines. The economical transportation of packaged freight is a "must" with shippers.

Clinton, Dubuque, St. Paul, Minneapolis, and Kansas City. They are designed to handle either less-than-carload, carload or barge-lot traffic.

Whether or not the Federal Barge Lines will continue in existence is the $64 question which will probably come before Congress sometime during this session. The doubt is expressed because the politics involved are sufficient to give the members cause to pause. From the testimony at hearings, and the letters received by the committees and members of the Congress, it is clear that the average small, and not so small, businessman, wants the Federal Barge Line continued until the Congress, or the officials in government responsible for the supervision of the lines, find some substitute for the service they are now giving. This being a Presidential election year, it would seem doubtful that it would be sound politics to disturb the *status quo* until the returns are in.

The legislation under consideration is embraced by two bills. One, H. R. 5318, provides for the continuation of the Inland Waterways Corporation, which operates the Federal Barge Lines and the terminals; this bill would virtually permit the sale of the Federal Barge Lines and the other assets on almost any terms. Under this bill it has been proposed to sell the properties to Theodore Brent and his associates, a group which heads up in New Orleans. Mr. Brent is the president of the Mississippi Shipping Co., and also of the Coast Transportation Co. The latter is a common carrier in the coastwise service. It is understood the Brent offer includes a cash payment of 10 percent of the value of the property, somewhere between $11,000,000 and $50,000,000. The syndicate would then take at least 20 years to pay the balance, whatever it might finally be determined to be. H. R. 5318 also permits the government to negotiate a lease of the Federal Barge Lines and the assets. The people on the Hill feel this might involve the government in further expenditures to maintain the lines. It is their purpose, at least the purpose of those who wish to divorce the

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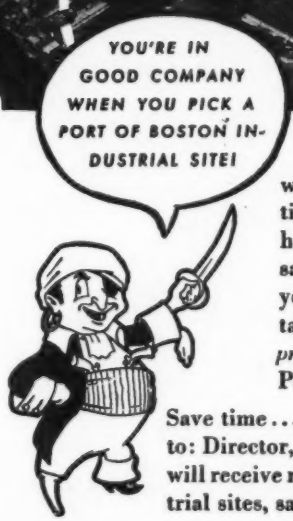

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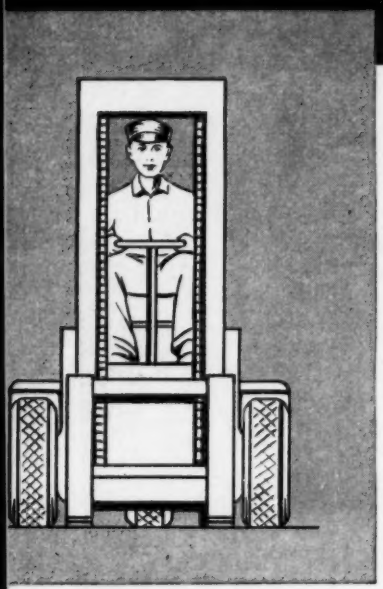

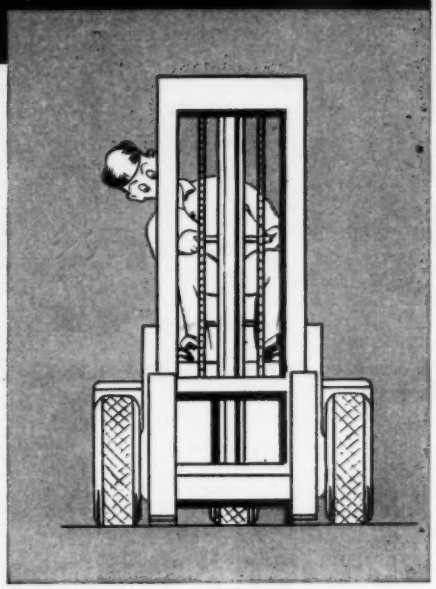

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lines from government ownership, to avoid any more appropriations for the maintenance of the enterprise.

This has led to the introduction of the second bill under consideration, H. R. 5476. The last bill would permit the sale of the assets of the Inland Waterways Corporation for cash, and in any form that an offer might be made to buy. This means that the purchaser or purchasers may acquire either the whole line, or any part thereof, or, apparently, any of the barges, boats or terminals, in units or piecemeal. The purpose of the bill is to bring the Federal Barge Lines to a complete termination, not later than 1953.

Unhappily for the members of the Congress who represent the states whose businessmen benefit by the operation of the Federal Barge Lines, any action which will disperse the lines and terminate the present type of services will cause literally thousands to hesitate to vote for the representatives and senators who are responsible for the result. It is one of the very curious anomalies of circumstance that the people who want the lines continued also do not believe in government ownership. Hundreds, representing thousands, who have appeared at the various Congressional hearings, have insisted that they wish the service of the lines continued in the form and character now in operation. They invariably tell the Congress that they approve of the sale of the assets to private persons, but that they wish to make sure that the operation of the lines continue as now conducted until it is assured that whoever buys the assets will carry on without change in program or service.

It has repeatedly been stated that the rates of the Federal Barge Lines are 80 percent of the rates fixed by ICC for competing rail service. But it also seems more or less certain that Federal's rates are sometimes lower than the rates charged by other barge services, and that Federal is extremely popular with the people who use the waterways because it ships their merchandise in less than carload

(*Continued on Page* 62)

A BASIC COMPENSATION PLAN FOR SALESMEN

Most salesmen's compensation plans have been designed for the needs of a particular company and consequently are not readily adaptable to others even in the same industry . . . The plan discussed by Mr. Coburn is developed from fundamentals so that it can be used, in essence, by any company regardless of the industry, method of distribution or the size of the sales force.

By R. M. COBURN
Marketing Consultant

THE underlying principles of equitable compensation for salesmen must always be the same. Only the details of application and the specific incentives and accomplishments to be paid for will vary. In the creation and development of such a plan it is necessary as the *first* fundamental to decide precisely what the salesmen's goals are to be. If sales alone are the only results expected, then they will work for nothing else. This plan, however, considers sales only as a means toward net profits and not as an end in themselves.

Since all of the functions of a business have some effect upon them, the creation of net profits is, in the final analysis, the responsibility of top management. The sales department, however, is in a unique position. Because it is axiomatic that no profit can be realized until a sale is completed, this function through its individual salesmen is the most valid measuring rod for managerial efficiency, best expressed as the ability to earn net profits.

Commercial enterprises exist fundamentally not to make sales but to produce net profits. It is true that many companies which enjoy satisfactory sales volume also manage to make some net profit, but in the struggle for sales volume, sales departments (and management too) often lose sight of the prime goal. Most of us can still remember the era of "profitless prosperity", when fully half of the corporations reported ever-increasing sales—and no net earnings—according to the reports of the Department of Internal Revenue, 1925-1929.

The *second* fundamental of this plan is the evaluation of each salesman's productivity, not only in sales volume and gross profits, but eventually in terms of net profits earned.

The measurement of salesmen's efficiency, with net operating profits as a standard, entails the consideration of many distribution expenses over which they cannot possibly exert any control. These costs, which far outweigh those controllable by either or both the sales department and the salesmen, are management problems. The *third* fundamental, then, is that an equitable compensation plan for salesmen is ultimately, though not exclusively, the responsibility of top management.

The *fourth* fundamental is that a successful incentive compensation plan must stem from the operating statement. Until you know specifically how much you make and from what sources, where your expenses go and in what amounts, you cannot create a plan that will be economically fair to both the company and the salesmen.

Incentives imply standards of accomplishment. If those standards are to be more than guesses based upon past performance, complete flexible budgetary control is necessary. That is the *fifth* fundamental principle.

The *sixth* principle is the isolation of distribution expense in its entirety. The principal items in all operating statements are:

a. Net Sales
b. Cost of Sales
c. Gross Profit
d. Distribution & Administrative Expense
e. Net Profit or (Loss)

There are certain implications, particularly in "Cost of Sales", about which accountants do not always agree. If that figure means precisely what it says then it must include every expense contributing anything whatsoever to the cost of manufacture and nothing else. That would mean, for example, that the expenses of a wholly-owned subsidiary, manufacturing only for the parent company, would stop at the loading platform. It would, in effect, have no distribution expense. It would also mean that all administrative expense becomes part of the cost of production.

In the ordinary company with sales and distribution costs it must be assumed that those parts of administrative expense which are directly or indirectly charged to production have already been included in the final "Cost of Sales". If that is true then item "d", "Distribution & Administrative Expense" can be written simply as "Distrubution Expense."

Accountants, generally, have not set up uniform specifications for production costs. It is the writer's contention that a manufacturer actually operates two establishments—one for production, the other for distribution. If that is correct, *all* operating expense must ultimately be charged (prorated arbitrarily when necessary) to one or the other.

This is the only procedure that can segregate and define an accurate, total cost of distribution. When some administrative and other expenses must be pro-rated by executive judgment, absolute precision is not always necessary provided the ratio of division is known by each group. The expenses of the general manager, for example, including the entire cost of his department, may be prorated possibly 55 percent for production and 45 percent for distribution. Regardless of the fluctuation of the item itself, if the welfare of the business demands this apportionment of his time, then those executives responsible for production and distribution costs can plan and act accordingly.

The sales department is responsible for only a portion of the total distribution cost, but nevertheless, it must produce sufficient gross profit dollars not only to pay for that overall expense but also to earn a net profit. That is why it was suggested earlier that salesmen's compensation plans are problems for top management. If the distribution cost beyond the jurisdiction of the sales department is too high it cannot earn a net profit. Yet it is burdened with the responsibility of producing sales and gross profit dollars not only to pay for the sales and advertising costs which it can control, but for all the rest of the distribution expense.

When the factory clamors for more volume to keep unit overhead production costs down and the sales department delivers the necessary sales, the operating statement may still often show red. Yet the sales department has accomplished what was asked of it and will properly resent any implication that it has not done its job. Its inability to produce net profits is often traceable to other distribution expenses which may be too high and which they cannot control.

The *seventh* fundamental principle, then, is the development of an accounting method which will establish a true cost for both production and distribution, such costs to represent total operating expense. With distribution costs isolated, analysis, control and accurate evaluation of the sales department's activities are possible.

Many companies today make some effort to formulate profit and loss statements for individual salesmen's territories. The direct costs of salesmen's maintenance, advertising and sales promotion are easy to identify and charge. The costs of writing and clerical processing of orders, accounting and billing, credit and collection are not difficult to apply to territories through direct charges to customers. Accurate application of the costs of warehousing, shipping, order filling, transportation, traffic management and all physical handling to territories, also through customers, is a problem of industrial engineering. Practical procedures have been developed which will allocate these charges on the basis of the actual use of the facilities by individual customers.

These direct charges, however, are only a part of the total distribution cost. Overhead and indirect expense, which must be equitably applied to territories, will account generally for more than a third of it. Unless a fair basis can be established for their allocation to individual territories it is impossible to formulate operating statements for them that have any validity.

If, however, it is possible to establish a method of segregating, classifying and applying *all* distribution expense so that management can determine with practical accuracy the true net profit or loss from each territory, then it will have the best yardstick available to measure the absolute and relative efficiency of each salesman. With this means of evaluation it is comparatively simple to set up productive incentive plans because they will be based on the only economic reason for the company's existence—net operating profits.

Many firms which are using cost accounting, cost analysis and cost control to reduce production expense are still ignoring the potentialities of these instruments for distribution. By their use a large part of the excess costs of manufacture has already been squeezed out. The elimination of excess distribution expense represents the sole remaining means of increasing operating profits through substantial savings.

The compensation plan to be described was part of the work done by the writer for a client several years ago. The company manufactured a wide variety of industrial equipment and supplies, sold nationally through distributors and mill supply outlets. Although manufacturing costs were well controlled and sales volume was maintained, net operating profits were steadily declining. Distribution costs were not well

defined and there was a vague feeling that perhaps they were too high. Expressed as a percent of sales, however, they were not out of line with averages for the industry according to their trade association.

Work was started late in 1938. Following is a summary of the operating statement, completed before any changes were made.

TABLE I
CONDENSED OPERATION STATEMENT—1938

Net Sales	$2,980,000	100.0%
Cost of Sales	2,093,800	70.3%
Gross Profit	886,200	29.7%
Distribution & Administrative Expense	790,400	26.5%
Net Operating Profit	95,800	3.2%

For purposes of cost and sales analysis, all products—both equipment and supplies were classified into 4 convenient groups as follows:

TABLE II
1938

Group	Unit Factory Selling Price	Gross Profit Range	Units Sold	Sales	Gross Profit	% Gross Profit
A	$4—$12	22%—27%	171,000	$1,367,900	$329,400	24.1%
B	$13—$45	28%—32%	26,310	658,100	197,500	30.0%
C	$46—$100	33%—36%	7,567	491,700	173,100	35.2%
D	$101—$200	37%—42%	3,083	462,300	186,200	40.3%
Total			207,960	$2,980,000	$886,200	29.7%

An analysis of the sales and gross profits earned in each of the ten territories, compared with market potential, both on a percentage and actual basis indicated that three of them were unprofitable. All were consequently reorganized to get a more even distribution of market potential. Two of them were eliminated. 232 customers were dropped, reducing the total from 1160 to 928.

The first step in organizing for budgetary control was to segregate and classify every function and every department, all or any part of which was to be charged to distribution. They were accordingly set up as follows:

FUNCTIONS

1. Executive Salaries. (Some pro-rated with production)
2. Clerical Salaries. (Some pro-rated with production)
3. Field Sales Expense. Salesmen's salaries and maintenance.
4. Advertising. Expenditures for space and external services only.
5. Sales Promotion. Out-of-pocket expenses only.
6. Physical Handling Expense. Warehouse and shipping labor. (Some pro-rated with receiving—a production cost)
7. Occupancy. (Pro-rated with production)
8. Miscellaneous. Supplies, depreciation on equipment, Tel&Tel, etc.
9. Interest on investment and finished goods inventory, insurance and taxes, other than payroll and income. (Pro-rated with production)
10. Special Services. Legal, auditing, dues, contributions. (Some pro-rated with production)

DEPARTMENTS

1. Vice President in charge of Sales and Advertising.
2. Sales.
3. Advertising & Sales Promotion.
4. General Administration. (Pro-rated with production)
5. Credit & Collection.
6. Accounting, order writing, billing, invoicing. (Accounting pro-rated with production)
7. Warehousing and Shipping. (Pro-rated with receiving)
8. Market Research.
9. Public Relations.
10. Product Engineering. (Pro-rated with production)

Exhibit I is an analysis and integration of departmental and functional expense for 1939, each properly pro-rated and allocated to the other. This was necessary for flexible budgetary control and for accurate classification of direct and indirect expense to be charged to territories.

Exhibit II, which is an operating statement for territories for 1939, comprises six separate classifications of expense. To illustrate the various methods of allocation it will be helpful to refer to EXHIBIT I for details. They are:

Column 2, Functional Expense. Salesmen's salaries and all personal expense, travel, car, meals, hotel, entertainment, supplies, etc. These present no allocation problem since they are all out-of-pocket costs spent in each territory and so recorded.

Column 3, Functional Expense. Advertising. This item represents space costs and related external charges only and contains no departmental or other overhead. Allocations to territories were made on the basis of the proportion of circulation going into each.

Column 4, Functional Expense. Sales Promotion. This item was direct mail about 80 percent to manufacturers who were customers or prospects and 20 to distributors. It represents external expense only, but no overhead. It was charged directly to territories as used, at so much per piece—straight cost. Unused quantities were put into suspense accounts as deferred expense).

Column 5, a. Departmental Expense. Credit and Collection.

b. Departmental Expense. Accounting, order processing, billing, invoicing.

For purposes of economy these two departments were grouped together. A simple method of allocation was developed which in this instance was accurate enough for the purpose.

The number of orders received, processed (clerical), entered and billed was counted at the end of each accounting period. That total was divided into the combined cost of both departments. The result was the cost of processing a single order for that month.

For example, the combined expense for a month may have been $3,000 and the number of orders processed, 600. The standard rate for a single order for that month

(*Continued on Page 72*)

BARGE SHIPPING

(*Continued from Page* 58)

or less than barge-load lots. Federal will take one pound of anything permitted by ICC if the shipper is willing to pay the minimum of 100 lb. While other water carriers say they will take the less than barge-load lots, it seems questionable that much of this kind of traffic is actually handled by other lines.

The hearings brought out that 36 percent of the business of the Federal Barge Lines consists of the less than carload or less than barge-load shipments. Not only does this service please the shippers, but it is extremely popular with many communities. Both communities and shippers were almost solid in their drive to keep the Federal Barge Lines in operation until some arrangements had been made to continue the service under private ownership.

One of the most striking complaints of the opposing barge lines is the statement that the Federal Barge Lines have a book of tariffs in fine-print covering 502 pages, and listing 25,000 rates. The opponents charge that many rates are either only rarely used or not used at all. They therefore insist that the publication of such a volume is a waste and a charge upon the taxpayer. The shippers on the other hand found the book very useful, and the Federal Barge Lines, unfortunately for the complainants, showed very conclusively that they collected more cash for the tariff books than it cost to print them.

Another complaint against the Federal Barge Lines is that it gets the cream of the business, and carries only a small percent of low-value traffic.

It is charged that the Federal Barge Lines have been badly managed, which appears to be indubitably true so far as its earlier years are concerned. It is reported that it has cost the nation anywhere from two to 18 million dollars more than it has earned. There is no doubt that there is a definite and sizable deficit after its 24 years of operation; but it is almost impossible to determine exactly what that deficit may be, from the data that are presented by the opponents or the proponents. It probably is somewhere around six million dollars. It should be remembered, however, that the enterprise was never intended to be self-supporting. It was designed originally to render an emergency war service without regard to cost. Then it was legislatively transformed into a sort of test-tube operation on the strenuous appeals of the people who wished to have improved services on the major waterways of the nation. This was the result of the reluctance of the regular barge lines to undertake anything that might be called experimental work.

During the past three or four years Federal has been managed by Capt. A. C. Ingersoll, Jr., a young man of extraordinary abilities. He has made the undertaking highly successful, both as a service and from the standpoint of efficient management and economic operation. No one has had anything but the utmost praise for him, and he has been amazingly frank in pointing out the weakness as well as the strength of his responsibility. He is candidly opposed to permanent government ownership of this business or any other business; but in discussing his problems he told the members of Congress:

"The Federal Barge Lines enables a tremendous army of shippers to enjoy the benefits of a lower, alternative rate structure, and they are no longer chained to the chariot wheels of the railroads. This rate structure has come to be a very basic factor in the economic structure of the Mississippi Valley and is not to be disposed of lightly. If there is any lesson to be drawn from the series of hearings, it is that the people want the rate structure preserved. I think the four cornerstones of our operating policy should be:

"1. To develop navigation and traffic on the Missouri.

"2. To develop profitable package freight handling techniques.

"3. To diligently pursue to a conclusion the establishment of acceptable formulae for rate-making relations with the railroads on the joint rail-barge business.

"4. To build up a sound, efficient, and salable barge line.

"Can the barge line be sold? My personal opinion is that the technical prerequisites of sale have been or can be met under the present law.

Coming Events

Apr. 26-29—17th Annual Packaging Exposition, The American Management Assn., Public Auditorium, Cleveland.

Apr. 26-30—National Packaging Week.

May 6-7—Second Highway Transportation Congress, of the National Highway Users Conference, Mayflower Hotel, Washington, D. C.

May 12-14—National Spring Meeting, National Accounting Committee of the American Trucking Assns., Inc., Statler Hotel, Detroit.

May 20-21—Annual Meeting, The Society of The Plastics Industry, Atlantic City, N. J.

June 14-17—Annual Conference, Canadian Warehousemen's Assn., Chateau Frontenac, Quebec City.

June 26-Sep. 11—International Industrial Exposition, Atlantic City, N. J.

July 1—New Orleans' International Trade Mart.

Aug. 10-13—First Western Packaging Exposition and Conference on Packaging, Packing and Shipping, San Francisco Civic Auditorium.

Sep. 27-Oct. 1—Third National Plastics Exposition, The Society of The Plastics Industry, Inc., not open to general public, Grand Central Palace, New York City.

Oct. 8-13—Annual Convention, American Trucking Assns., Washington, D. C.

Oct. 14-16—Annual Convention, Southwest Warehousmen's & Transfermen's Assn., Skirvin Hotel, Oklahoma City, Okla.

Jan. 10-14, 1949—3rd. National Materials Handling Exposition, Philadelphia, Convention Hall, Philadelphia.

Feb. 7-10, 1949—58th Annual Convention, American Warehousemen's Assn., Fairmount Hotel, San Francisco. (Joint meeting of both divisions: National Assn. of Refrigerated Warehouses and AWA Merchandise Div.)

"I suggest that modern rehabilitation be begun at once and pushed as vigorously as possible, and that negotiations be started toward the sale of the line *under the present law* as soon as a deal can be made.

"After 24 years of honest and difficult pioneering and expansion, the barge line is faltering and its opponents are shouting that it be done away with. What is their cry? They say heavy losses have been sustained. I understand the Pennsylvania Railroad lost ten million dollars last year, that the Trans-World Airline lost a million dollars a month last winter. Does any one suggest they be liquidated? The Federal Barge Line Corp. as a whole has a deficit as of January 1, 1947, of $2,141,822.22, but this loss has all been on the Warrior River. The Mississippi division, including the Illinois and Missouri Rivers, shows a net operating income of $803,680.91. They say Federal is taking bread from the mouths of private barge lines and stifling private enterprise. Traffic handled by all carriers on the Mississippi River system in 1920 was over 25 million tons; in 1935, over 63 million; in 1945, over 95 million. Federal's best year was a little over two million tons. In 1933 there were a total of 389 carriers on the Mississippi River system; in 1946 there were 604."

The Secretary of Commerce, who is in overall charge of the Federal Barge Line affairs, wants 17 million dollars to put the business in good condition under Ingersoll's management. Ingersoll's program includes the integrated tow, a new undertaking whose trials have been highly praised by friend and foe. The integrated tow consists of a specially-built type of towboat, with specially-built barges that can be adjusted in much smaller compass than the old loosely articulated string, can make journeys more swiftly and easily and can carry more for the expenditure involved. It is calculated the integrated tow will bring the cost of line service down 50 to 65 percent, saving 1.5 million dollars to two million dollars per year.

Coughlin Retires from Coughlin-Crosby Corp.

Leo J. Coughlin, president of Coughlin-Crosby Corp., 120 Wall Street, New York, consultants on materials handling and port development, will retire from the consulting business upon the completion of the study of New York harbor, currently in process for the Port of New York Authority. The first section of this study was incorporated into the report on city piers which the Port Authority presented to the mayor in February. This section included complete operational plans and estimated future income for all of the piers in the harbor owned by the city of New York, and formed the basis for the Port of New York Authority's offer of 114 million dollars for the New York city piers. The work now in process will include a similar analysis of various installations on the New Jersey side.

In the future Mr. Coughlin plans to devote his time principally to the Bayway Terminal in Elizabeth, N. J., of which he is president, and to his other interests.

William C. Crosby, who was vice president and general manager of the Coughlin-Crosby Corp. is continuing the activities of that group under the name of William C. Crosby Surveys, maintaining offices at the same address, 120 Wall Street, New York. He is presently engaged in two economic and operational surveys of harbor development for the Insular Government of Puerto Rico.

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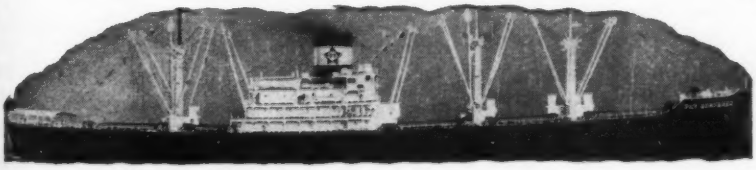

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ONE-STORIED WAREHOUSES

(*Continued from Page* 35)

building space is usually leased or allocated to customers whose activities are widely divergent. One tenant may want areas in which his merchandise is moving in and out with reasonable regularity. Others may require space to store goods bought on a favorable market but where rapid movement out is not a requirement. Other concerns may want areas for special purposes such as the storage of bonded liquors, etc. Buildings of this type are more liable to be located in metropolitan areas where railroad connections and tenant demands are such that the warehouse must be located on more expensive city property whose cost might indicate a multi-story building.

This is not to say that if the warehouseman had a satisfactory site available and at reasonable cost he could not build a one story building which would be well adapted to the character of business which he is required to service. On the contrary he might find that the one story building with horizontal handling of merchandise even at some additional construction cost might result in economies of handling and proper allocation of space distinctly to his advantage. After all, at the risk of repetition, you pay the construction cost once but you pay operating costs over a long period of years.

Mail order buildings involve warehousing on a rather grand scale inasmuch as these buildings frequently cover from one million to four million sq. ft. of floor area. Each order coming in to a mail order store may include a dozen widely diversified items of merchandise. In most mail order houses heretofore built, the items of such an order are scattered in various locations throughout the immense warehouse area in a building usually about nine stories in height. Each piece of merchandise therefore is picked out and sent down to the sorting belt on lower floors by means of spiral chutes where it must be sorted and an entire group of items brought together at one time in the shipping room where they are packaged and mailed. In this particular activity a definite trend is discernible for the reason that recently the first one story mail order warehouse has been built where all the merchandise is stored on the first floor of an area approximately 600,000 sq. ft. In this case items of merchandise are picked up and transported to a relatively small second floor or mezzanine shipping room by means of belt conveyors and are sorted there and packed for mailing. This building is somewhat experimental and it will take time to determine whether the system will work out as economically and efficiently in this one story building as it has in multi-story units above mentioned. It is significant also that in this project city ordinance permitted individual areas of 200,000 sq. ft.

Inasmuch as this paper is being presented to the merchandise division of your association, we make no attempt to analyze special requirements and character of service which might be involved in port terminals, railroad terminals, cold storage warehouses and other very special use warehouses. Practically every manufacturing plant also has its own problems of warehousing to a greater or lesser degree. What has been said heretofore would have application in the majority of such warehouses.

Just a word of caution in considering one story warehouses. City building departments or fire prevention bureaus have in the case of certain large one story buildings insisted upon a main service sprinkler loop around the exterior of the entire building with branches run in to take care of various risers and with hydrants located adjacent to the loop on the outside of the building. This definitely more expensive type of sprinkler system than that which would be installed in a multi-story building of equal size should be given consideration in any first cost comparison of the two types of structures. Somewhat along the same line some fire departments have raised the question of accessibility for fire fighting apparatus in certain one story warehouses of unusually large floor area. Likewise city building departments have required systems of mechanical ventilation in one story buildings of large floor area, which increases both construction and operating costs.

It would seem from all the foregoing that on operations of any magnitude the decision as between a multi-story or a one story warehouse could only be made logically and accurately after a thorough engineering analysis had been made of all the factors of site location and operating needs. This probably could not be done until some sketch plans or preliminary layouts had been made of both types of buildings. Estimates of first cost and operating costs should be made by experts.

In arriving at the relative operating costs of the two types of buildings it may be pertinent to quote from the January 1948 issue of the magazine *Industry and Power*. This magazine recently conducted a survey as to the statistics of materials handling in industry. What they say for industry we suspect might apply to warehousing. This survey indicates that materials handling costs in the average plant are actually 36.3 percent of overall production costs. Unfortunately only 23 percent of the 120 industrial plants contacted keep accurate records on this phase of their operations. Others could only offer a guess at the figure. Practically every company was found to employ some form of conveying or handling equipment. However, the fact remains that the materials handling industry has a long way to go before it reaches its ultimate goal. Compared with the

perfection of other equipment such as boilers, compressors, metal working machinery and countless others, the development of equipment to handle all phases of handling is still in its infancy. Accurate costs of the relative effectiveness of different types of materials handling equipment are very difficult to obtain. On the other hand in some large chain store warehouses handling costs are kept to an accuracy of 5 places of demicals of a cent.

There is no doubt that in the last 15 years there has been a great trend in favor of one story industrial plants throughout the country. The automobile has been largely responsible for this. Industry has been able to get off the city streets on to acreage. Bus lines and privately owned motor cars have solved the transportation problem of their employes. In manufacturing operations assembly line production has become a major factor in the development of one story buildings of great magnitude.

Industry in World War II given the green light by the government to build the ideal factory went out into the country and built one story buildings of high story heights and wide spans. Their parking problems, freight handling in and out could be solved with great economies compared to multi-story buildings. Many of these plants had their warehousing problems and used a one story building to solve them.

TRENDS OF CONSTRUCTION COSTS. If the law of supply and demand is any guide as to the future of construction costs there would seem to be of little likelihood of there being any substantial or enduring decline in the cost of buildings. Two large factors support this prediction.

The Turner Construction Co. in its 46 years' experience has built some 163 warehouses (other than cold storage warehouses) of which 146 were multi-story and 17 one story. An analysis of the costs of nearly 100 of these warehouses has been made for us. All costs were adjusted by that company's construction cost index to a common cost basis, namely Feb. 1, 1948. A study of these costs warrants the following opinion. Speaking broadly and generally for Eastern states the average cost today of a multi-story fireproof warehouse, *not* including plumbing, heating, lighting, elevator and sprinkler equipment, ranges from five dollars to six dollars per sq. ft. This is entirely exclusive of any operating equipment. One story fireproof warehouse costs also range from about five dollars to six dollars per sq. ft., not including plumbing, heating, lighting, and sprinklers. These costs are influenced greatly by the size and shape of the building and the site conditions. In our experience it is unusual for a one story storage warehouse to be built fully fireproof. The ones built by the leading companies are usually fire-resistant only, that is masonry walls and unprotected steel frame. A building of this type would cost today $4.50 to $5.50 per sq. ft.

To make all of the foregoing figures more usable it is appropriate to state that the cost of the

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mechanical work should add to the above figures between 20 percent and 30 percent depending upon the characteristics involved, such as the number of elevators in the multi-story building or the degree of fire protection required in the one story design, or the effect of greater ground area on other facilities. It might be that in smaller cities where relatively low wage rates prevail these costs might be lower by as much as 10 percent.

It may be of some interest to those who have to deal with building construction to know the distribution of cost of a typical one story fire-resistant warehouse building amongst the more important elements. The accompanying figures are a fair guide.

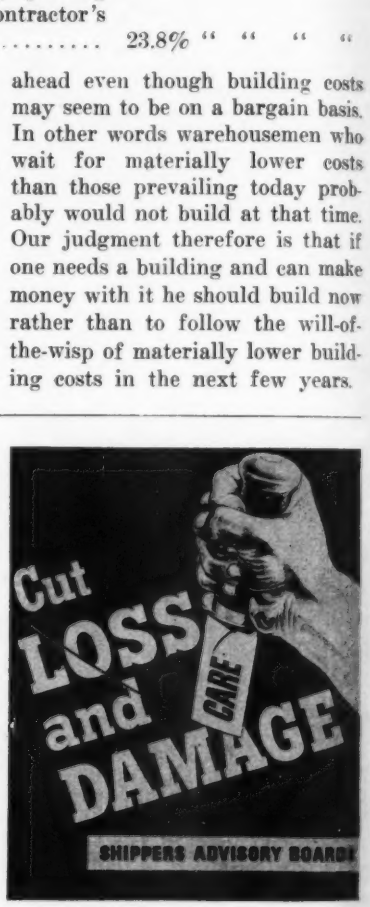
Sprinklers	6.1%	of	the	total	cost
Electric Lighting	3.2%	"	"	"	"
Plumbing	3.5%	"	"	"	"
Heating	5.0%	"	"	"	"
Excavation and Floor on ground and Foundations on a normal site	13.6%	"	"	"	"
Structural Frame	16.1%	"	"	"	"
Walls, windows and exterior doors	15.4%	"	"	"	"
Roofing and Roof Deck	9.3%	"	"	"	"
Interior Partitions and Doors	4.0%	"	"	"	"
Miscellaneous cost including railroad siding, outside grading, paving, parking areas, job overhead, and contractor's Profit	23.8%	"	"	"	"

There has been a lot of work authorized by important farseeing companies and some speculative builders who were convinced that it was folly to wait for much lower building costs. On many of the jobs that have been postponed, the postponement was due to reasons other than building costs.

We jointly have been active in the building industry since 1906 and in that time have been through four recessions or depressions—depending upon one's choice of terms—and our observation is that in such periods very few major building projects go ahead even though building costs may seem to be on a bargain basis. In other words warehousemen who wait for materially lower costs than those prevailing today probably would not build at that time. Our judgment therefore is that if one needs a building and can make money with it he should build now rather than to follow the will-o-the-wisp of materially lower building costs in the next few years.

Perfect Shipping

The 1948 Perfect Shipping Campaign, the 12th of its kind, began April first . . . Shippers, freight handlers, receivers are all asked to join in cooperative effort to lessen America's huge loss and damage bill.



THE 1948 Perfect Shipping Campaign, recently launched by the thirteen Shippers Advisory Boards, representing 25,000 shippers and receivers, through their National Management Committee, is well under way. It is hoped that through cooperation of shipper, receiver and handling agency, the tremendous loss and damage bill to the transportation agency and to the nation can this year be cut.

Literature distributed by the Assn. of American Railroads to shippers, receivers and freight handlers stresses the fact that all must cooperate in the undertaking, for all will benefit.

Some of the suggestions given shippers for cooperation in the program are:

1. Give responsibility for perfect shipping to one man.
2. Study new container designs. Ideas on design can be obtained from trade magazine stories, laboratory studies for each product by specialists, container suppliers.
3. Mark shipments plainly with right destination and right state. Avoid double markings by erasing old markings.
4. Be sure to inform own employes, carrier and receiver of any special handling needs of any particular product.

The booklet for distribution to freight handling employes stresses the following points:

1. Study receiving requirements and be sure of what is signed for.
2. Check for marks, avoid double marking.
3. Observe carefully all special handling signs.
4. Call attention to improperly-packed freight.
5. Build a smooth load to avoid damage.
6. Avoid hard contact between cars when switching.
7. Cooperate with all other departments to put the job over.

INTERNATIONAL AIR EXPRESS

(*Continued from Page* 45)

its agreements with five non-IATA airlines: Australian National Airways, Chicago & Southern Airlines, Colonial Airlines, Peruvian International Airways and Taca Airways Agency. (2) Freight forwarders, particularly those in the international end of the business, will be raised from their more or less supplementary status to that of the principal international air cargo agents in the United States. Pan American has already entered into agreements with 150 forwarders and intends to do so with many more in all parts of the world. Last year Pan American handled about 90 percent of all air cargo, including express, into and out of the United States, and REA handled some 604,643 individual shipments, an increase of more than 25 percent over 1946. Now the freight forwarders will have an important part in this business.

As is to be expected, REA is not entirely happy about the airline action, but claims that its loss will not be as great as it would have been if it had entered into new airline contracts on a five percent commission basis. It also claims that the freight forwarders will have to be selective as far as shippers are concerned to make a profit and that therefore the smaller shippers will be hurt. Airline feelings are mixed. Pan American, with its far-flung organization, its large share of international traffic, and its ability to set up a system of its own with freight forwarders as the key ground operators, feels that both it and shippers will receive better service, and is happy about the whole thing. Other airlines, slower in organizing their own facilities for doing what they had come to depend on REA for, are not as happy. In the last analysis it is the shipper who should have the final say in the matter and, as yet, they have not fully understood what has happened. It remains for shippers to be heard on the matter after they have a chance to judge of the new service as compared to the old.

AWA Selects Convention Date

The 58th annual convention of the American Warehousemen's Assn. will be held next year at the Fairmount Hotel, San Francisco, February 7-10. In accordance with the usual custom, the meetings of the two AWA divisions, the National Assn. of Refrigerated Warehouses and the Merchandise Division, will be held concurrently.

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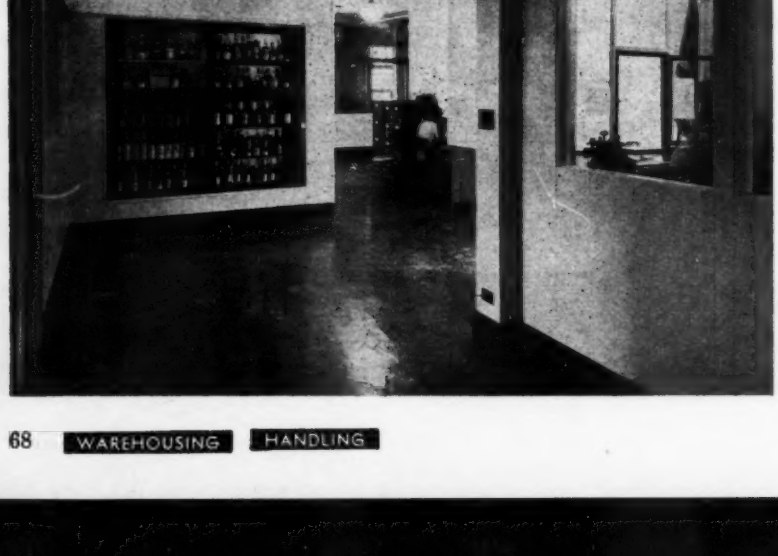
AWI DISTRIBUTION

5-point modernization program has enabled warehousing chain to add many new nationwide distribution services, and has increased tonnage handled six times . . . Program included:

- NEW BUILDING CONSTRUCTION
- BUILDING MODERNIZATION
- MECHANIZATION
- STREAMLINING OFFICE PROCEDURE
- PUBLICITY AND SALES CAMPAIGN

THE MEMBERS of Associated Warehouses, Inc., began planning a million dollar expansion program four years ago when they were in the midst of the war-time job of handling the largest storage volume in their history with buildings and equipment that were not designed to do the job that had to be done. Immediately following the war, a modernization program was started and has been rapidly going forward ever since. The original plans added a host of new and varied services to the basic storage operations of members. The original program improved efficiency in handling materials and so increased the volume of business resulting from the new services offered that a second program of construction and mechanization is now under way. The objectives of this program are threefold: 1. New construction. 2. Modernization of existing facilities. 3. New selling approach to industry.

Typical modern office and display space speak well for public warehouses. Manufacturers and distributors can set up immediately a complete sales branch under one roof.



The story of the new services and new handling methods that have been developed in an old industry began back in the war days when members were working 24 hours a day, seven days a week, and were running into costly handling and storage problems. These problems were discussed at group meetings and a program for the modernization of warehousing facilities and techniques was formulated. Capitalizing on war-time experiences, AWI members began planning an expansion program in the way of new one-story facilities, revamping of old buildings and the re-equipment of warehouses with the latest mechanical handling devices. Discussion at group meetings brought forth the problems and the answers. Each Associated Warehouse acted independently in its modernization program. Through this program the scope of branch warehousing has been expanded and has received wide acceptance by commerce and industry. In support of these activities a new advertising and selling approach to industry has been developed.

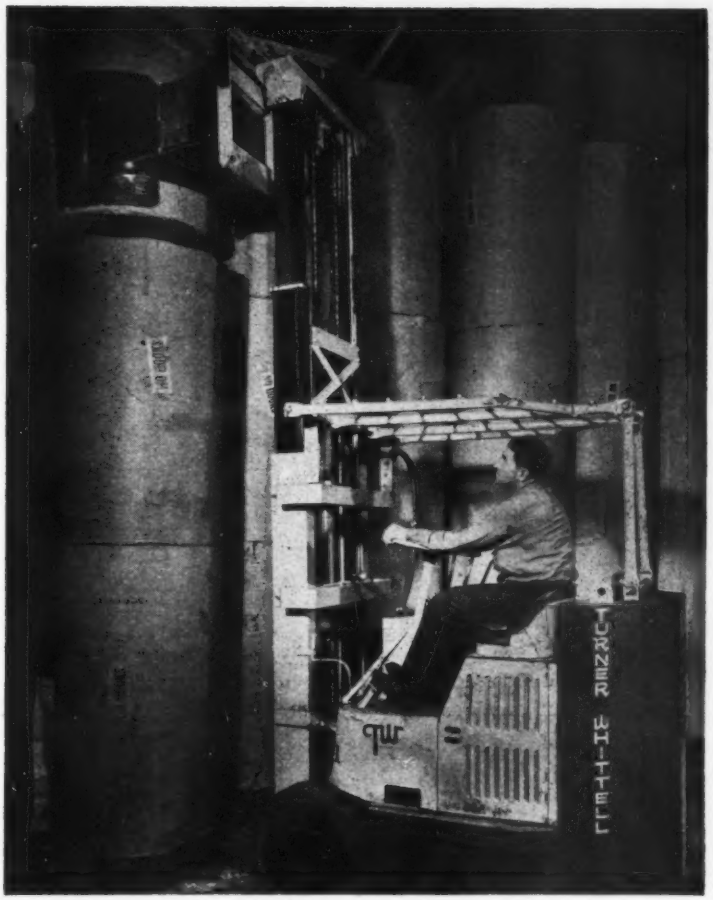
The program as it was carried out by AWI members covered five distinct phases: 1. New buildings and additions. 2. Remodeling and

PROGRAM

By CLYDE E. PHELPS

Executive Secretary

Associated Warehouses, Inc.



New types of mechanical handling equipment, such as this specially-designed paper clamp, prove the ability of public warehouses to adapt themselves to the changing scene and bring to their customers the latest and best in devices and methods.

modernization of present storage facilities. 3. Mechanization. 4. Streamlining of office procedures. 5. Dynamic selling.

New Buildings

CONSTRUCTION OF NEW BUILDINGS. AWI members have spent millions of dollars in construction of modern one-story warehouses designed to handle volume traffic on a completely palletized basis. This type of building is illustrated in a new warehouse constructed by H. L. Lawson & Son, Roanoke, Va. This is a one-story building with an 18 ft. ceiling height, and a floor load of 500 lb. per sq. ft. This typifies the ideal type of modern one-story warehouse for in-transit storage. This type of operation is completely mechanized and not only cuts distribution costs in half, but speeds up handling and reduces damage. The stacking arrangement is 3-2-3; this is done for pile stability. Buildings of this type have been constructed to supplement our members' facilities in many of the important distribution centers of the country and have provided several million additional square feet of storage space for bulk movement of cargoes and materials. It has been found advantageous and economical to use one building for carload in and out and another building for carload in and l.c.l. out, or general package storage.

MODERN OFFICES. In some cities, modern office buildings have been constructed as additions to AWI warehouses. Typical of this type of construction is the three-story modern air-conditioned office building of Koon-McNatt Storage & Transfer Co., Dallas. This building provides very desirable office space. It has large windows and a modern front. It is designed to appeal to manufacturers who want office and display space in conjunction with general storage. This type of facility is especially valued by manufacturers who have trebled their demand for branch office and warehouse space combined.

SEGREGATED BUILDINGS AND STORAGE. Another type of service provided through new buildings is storage facilities for commodities that require isolation because of odor, risk from fire, or for other reasons. In order to protect our customers and to take care of the demands of fertilizer manufacturers, drug houses and chemical suppliers, AWI members have constructed small separate buildings, to provide facilities for this type of storage and to meet a growing demand.

Remodeling and Modernization

MODERNIZATION OF PRESENT BUILDINGS. AWI members have embarked upon a modernization program which involves revamping present warehouse buildings. Architectural and materials handling engineers have redesigned plant layouts to facilitate traffic

movement. New railroad sidings have been installed, larger truck platforms and unloading docks built, while high speed elevators replace small slower types. In general, many warehouses had their faces lifted to meet the demands of postwar industry. This modernization has increased the capacity of AWI warehouses to handle so called "package accounts" and the "l.c.l. outbound movement." In some cases the number of accounts handled has been doubled.

LOADING DOCKS ENLARGED. Fig. 1 illustrates a new and enlarged loading dock, typical of the type and size needed to meet today's heavier traffic. The largest trailers and semi-trailers can be handled by this type of a loading dock without congestion. It provides customers with faster and more efficient delivery from warehouse stocks and, by eliminating the bottleneck of the loading and unloading platform, speeds up the entire warehouse operation while reducing costs and increasing volume.

MODERN OFFICES BUILT. The modernization program included the building and installing of modern offices and display space. In older buildings the transformation was unbelievable. Fig. 2 shows a typical modern office with display space. At one time, the space shown here was filled with general merchandise in an old style warehouse. The present beautiful offices fill the need of manufacturers who are branching out and demand office space in conjunction with their warehousing of packaged material.

PORT FACILITIES REVAMPED. Many of AWI members operating port facilities found it necessary to revamp their operations which had been overworked during the war. In many cases new equipment was installed. The Duluth Terminal and Cold Storage Co. operates one of the most modern port facilities on the Great Lakes New docks and separate storage sheds have been built, and new conveyors and mechanical equipment installed. As a result bulk cargoes from boat to warehouse can be handled in one half the time needed before the war. Modernization of AWI warehouses has transformed handling to an almost completely mechanized operation.

Mechanization

The use of modern materials handling devices, such as fork trucks, tractor trailer trains, conveyors and other mechanical equipment together with specially designed equipment has resulted in substantial distribution economies. Members employed the services of materials handling engineers to design special types of equipment for particular storage applications. Fig. 3 illustrates a very unusual type of mechanical handling operation performed by Turner-Whittell & Gibralter Warehouses at San Francisco. The special paper clamp shown was designed by McDonald for Gibralter Warehouses. In the operation pictured this special clamp fills a long felt need for a mechanical device for handling rolls of printing paper. It does the job quickly and without damage, transforming a slow costly hand operation into one that is profitable. Attention is directed to the safety device which covers the head of the operator. This is provided to prevent injury should a paper roll fall. This type of special equipment is typical of the many different handling problems that have ben solved through postwar handling studies.

Streamlining of Office Procedures

The fourth part of the program concerned itself with streamlining office procedures. Here again, we faced a bottleneck and it was necessary to do much joint study in the matter of perfecting uniform forms and office records that would eliminate duplication of work and cut down the details in handling orders through the office. The Bankers Warehouse, Denver, made a special study of this problem and all of our members have worked closely in streamlining operations with the result that office routine has been reduced to a minimum in processing orders. In some instances, entirely new systems have been installed, new order and billing machines have been placed in operation, simplified and uniform warehouse forms adopted. This has served the three-fold purpose of increasing the speed and efficiency in handling customers' orders, of cutting down errors and of permitting warehouses to take on special services

New and enlarged loading docks provide more space for handling huge trailers and trucks, speed distribution service.

for customers such as invoicing, billing, preparing shipping papers, handling parcel post and other detailed shipping services that could not have been offered or performed under the old methods of office procedure.

Dynamic Selling

In support of this program of modernization, we developed a dynamic selling drive in order to tell our story to the public. We wanted manufacturers and the public to know that the warehouse industry had lifted its face to the new horizons of modern business and was in a position to perform the complete type of warehouse service required in this distribution era. Our modernization program enables us to offer manufacturers, wholesalers and distributors a flexible, on-the-spot system of maintaining delivery stocks at costs based on per-unit distribution. Thus, warehousing costs rise and fall with sales. Also, it allows swift development or realignment of a national distribution and sales program, and eliminates the need and cost of establishing local branches, leasing space or erecting buildings.

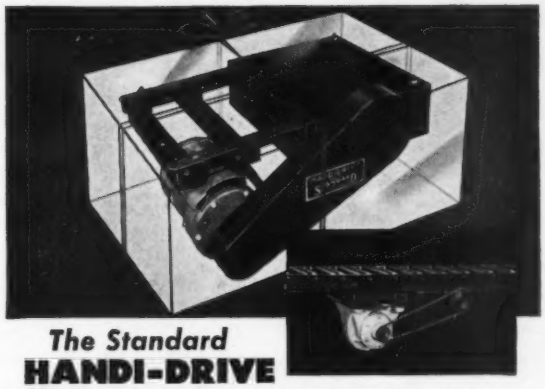
Our selling program involved the use of direct mail advertising, display space and personal contact work. Graphis and humorous sales messages were employed and our story was put across in a manner so successful that tonnage handling today through our warehouses has more than trebled its prewar volume and the number of accounts served, together with the variety of services performed, has quadrupled.

OBITUARY

George Chadwick, a former president of the Canadian Warehousemen's Assn. (1928-29); recently retired from Manitoba Cartage & Storage Co. in Winnipeg.

Burke Holbrook, 66, president General Warehouse Corp., Springfield, Mo., member, National Furniture Warehousemen's Assn. and American Warehousemen's Assn. (Van Horn)

New "Power-Package" Unit for Roller and Belt Conveyors



The Standard
HANDI-DRIVE

THIS self-contained drive unit provides tractive power for any gravity conveyor—belt or roller. Converts present conveyors to live roller or belt—quickly at low cost.

HANDI-DRIVE Bulletin No. DA-48 gives complete information—how to apply to present conveyors or plan new system with standardized units—straight, curves, or inclines. Write for copy today.

STANDARD CONVEYOR COMPANY, NORTH ST. PAUL 9, MINN.

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SAFER-FASTER-BETTER
WAY TO OPEN BALKY BOX CAR DOORS

MONARCH ONE MAN
CAR DOOR OPENER

One man can open the most binding balky box car door with the Monarch Car Door Opener. Get greater safety . . . speed loading and unloading schedules . . . order an ample supply to fill your needs today!

* No strained muscles. No slips or falls. No broken arms, legs or mashed fingers. No fatalities. No time wasted. No "gangs" needed. No time loss.

THE NOLAN COMPANY

108 Pennsylvania St.
BOWERSTON
OHIO

Write for Free Descriptive Literature

COMPENSATION PLAN

(*Continued from Page* 61)

would be $5.00. If one territory accounted for 80 orders during that period it was charged $400 for both departments. Since these two together accounted for only 4.9 percent of all distribution expense in 1939 it can be seen that this method of allocation is accurate enough for practical purposes. There are, of course, separate and more detailed methods available.

COLUMN 6, DEPARTMENTAL EXPENSE. Warehouse and Shipping Departments. This includes traffic management, order filling and all the costs of physical handling and storage of finished goods.

Packages for storage and shipment ranged from cartons 12″x18″x20″ to cases 4′x5′x5′. It was first necessary to determine storage and handling costs for a single package of each size. Using time and motion studies, a standard cost for the labor time of handling and a warehouse cost based on cubic space occupied, were computed. These were mathematically combined to find the lowest cost unit to which was assigned a rating of 1—the standard. All others were graded up according to their expense ratio to the lowest; 2, 5, 20, 50, etc. In all there were only nine groups. No decimals were needed.

At the end of each month the number of standard units actually shipped, was computed. This was divided into the total departmental expense and the charge per standard unit was the result. For example, if there were 25,000 standard units shipped and the expense was $10,000, then the cost per standard unit for that month was $0.40. If a territory received 3,000 units it was charged $1,200.

A more accurate method would allow for the differential caused by the same number of units shipped in varying numbers of orders. Spot checks showed, however, that the additional precision was not sufficient to warrant the extra expense of more detailed methods. Few customers ordered more or less than once or twice a month.

COLUMN 7, DEPARTMENTAL EXPENSE. All remaining indirect and overhead expense not previously charged. As an example, referring to EXHIBIT I, this figure in 1939 was $284,060 and was made up as follows:

a. VICE PRESIDENT in charge of SALES & ADVERTISING ..$27,700
b. SALES DEPARTMENT. (less FIELD SALES EXPENSE) 60,010
c. ADVERTISING DEPARTMENT. (less DIRECT ADV. & PROM. EXP.) 52,530
d. GENERAL ADMINISTRATION 89,340
e. MARKET RESEARCH 22,420
f. PUBLIC RELATIONS 15,040
g. PRODUCT ENGINEERING . 17,020
TOTAL $284,060

This was by far the largest single item to be charged to territories. In 1939 it accounted for 38 percent of all distribution expense. An improper allocation here could so distort any calculation of territorial profitability as to nullify the value of operating statements.

Many accountants pro-rate these indirect and overhead expenses to territories on the basis of percent of sales volume. If two territories, A and B, each accounted for 15 percent and 6 percent of total sales and if the amount to be so allocated were $200,000, they would be charged $30,000 and $12,000 respectively.

The fallacy in this method, which destroys its usefulness, is that the more sales a salesman makes, the more he is penalized with extra overhead expense. If he is lazy and incompetent, making very few sales, his overhead charges go down accordingly. In the event that he made no sales, he would be charged with none of this expense—reducing that method of allocation to an absurdity.

The value of any system of expense application must lie in its ability to represent actual condi-

(*Continued on Page* 122)

EXHIBIT I. ANALYSIS OF EXPENSE—1939

FUNCTIONS	Vice Pres. Sales & Adv.	Sales	Advert'g Sales Prom.	General Administ'n	Credit and Collection	Acc't'g Billing	W'house and Shipping	Market Research	Public Relations	Product Engineering	TOTAL
Exec. Salaries	$18,000	$19,000	$10,000	$46,000	$ 6,000	$ 6,000	$ 24,000	$ 8,000	$ 9,000	$ 7,000	$153,000
Clerical Salaries	5,900	13,000	11,000	26,050	5,900	7,150	.....	10,000	3,000	5,500	87,500
F'ld Sales Exp.	.....	94,700	.....	.....	.....	.....	.....	.....	.....	.....	94,700
Advertising	.....	.....	150,000	.....	.....	.....	.....	.....	.....	.....	150,000
Sales Promotion	.....	.....	60,000	.....	.....	.....	.....	.....	.....	.....	60,000
Warehouse & Handling Labor	.....	.....	.....	.....	.....	.....	40,600	.....	.....	.....	40,600
Occupancy	1,500	10,000	8,000	6,900	2,250	2,250	23,500	1,500	1,200	1,000	58,100
Supplies, Depr'n, Tel & Tel, Misc.	430	5,700	4,500	4,250	1,700	3,120	24,200	1,500	1,000	2,500	48,900
Interest, Ins'nce, Taxes (Non P.R.)	1,580	10,210	15,740	5,180	910	1,160	7,500	1,210	730	880	45,100
Special Services	290	2,100	3,290	960	150	200	1,550	210	110	140	9,000
TOTAL	$27,700	$154,710	$262,530	$89,340	$16,910	$19,880	$121,350	$22,420	$15,040	$17,020	$746,900

EXHIBIT II. PROFIT AND LOSS BY TERRITORIES—1939

Terr.	Total Sales	Sales Field Expense	National Advertis'g	Sales Promotion	Credit & Account'g Expense	Wareh'se Shipping Expense	Indirect Expense	Total Dist'n Expense	Gross Profit	Net Profit
1	$ 436,650	$13,200	$ 24,300	$ 9,720	$ 6,070	$ 17,600	$ 40,600	$111,490	$143,791	$ 32,301
2	324,950	12,400	17,700	7,080	5,560	14,550	35,800	93,090	106,555	12,465
3	264,635	9,400	14,400	5,760	3,530	11,500	28,960	73,550	80,733	7,183
4	399,350	10,800	22,200	8,880	4,960	17,100	37,500	101,440	131,871	30,431
5	386,150	11,600	19,950	7,980	4,820	15,550	36,900	96,800	126,683	29,883
6	332,750	12,800	16,650	6,660	3,830	14,450	34,400	88,790	105,032	16,242
7	313,200	9,700	15,450	6,180	3,610	14,200	33,800	82,940	101,263	18,323
8	390,315	14,800	19,350	7,740	4,410	16,400	36,100	98,800	130,072	31,272
TOTAL	$2,848,000	$94,700	$150,000	$60,000	$36,790	$121,350	$284,060	$746,900	$925,000	$178,100

Territory	% of Potential	% of Sales
1	14.3	15.3
2	12.6	11.4
3	10.2	9.2
4	13.2	14.0
5	13.0	13.6
6	12.1	11.7
7	11.9	11.0
8	12.7	13.7
TOTAL	100.0	100.0

SHIPBUILDING AND SECURITY

(*Continued from Page* 33)

States needs an active merchant marine for national defense, and we must not create conditions in which that merchant marine cannot survive."

Our surplus of war built tonnage consists almost entirely of ships designed and built solely for emergency war service and unsuitable either to compete in foreign trade with new foreign-flag vessels or to form the backbone of a merchant marine adequate for national security.

Uncertainties regarding the future economic requirements for shipping have no relation to national security.

It appears to me that the recent budget message ignores the merchant marine as an element of national security notwithstanding the findings and recommendations of the President's advisory committee on the merchant marine.

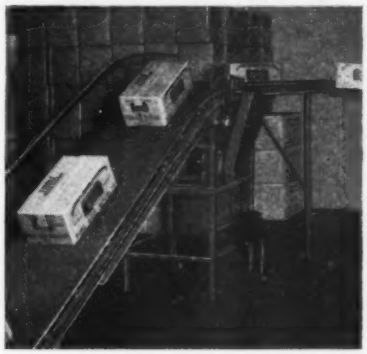
The recent Economic Report to Congress says that construction of new ships can well be deferred until inflationary demands have eased and materials are more readily available. One cannot help but wonder how foreign maritime nations, despite their desperate economic condition, can afford heavy shipbuilding programs while the United States cannot. Or why the Export-Import Bank should advance funds to shipbuilders of a former enemy nation. Or why the sixteen countries participating in preparing the Paris Report of the Committee on European Economic Cooperation, in addition to asking us for ships now, should plan a ship construction program, which, by 1951, will not only eliminate the American merchant marine from further participation in the reconstruction of Europe, but will assure the participating countries of a total merchant fleet not merely in excess of the prewar fleet, but in excess to the extent, by a strange coincidence, of somewhat more than the prewar German fleet.

The shipbuilding and ship repairing industries form a comparatively small, but vital, segment of our industrial structure. However, they reach out and affect the allied marine industries and innumerable other manufacturers of material and equipment throughout the country. Wages paid to men in those industries, therefore, have a nationwide effect on the national welfare.

The shipbuilding and ship repairing industries are unique among industry in many ways. A ship is an infinitely complicated structure to which no other engineering project is comparable. It is not manufactured in volume like the relatively low cost products of our mass production industries. One or two units of great size and high cost, taking from one to several years to complete, constitute a normal order. It requires not only an extensive layout of special facilities, but specialized engineering and skills gained from years of experience. Without work in the shipyards skilled personnel is lost. A valuable national asset, vital to national security, is being dispersed.

In the interest of national security, we need to build a substantial number of large fast passenger ships in which we are sadly lacking at present, as well as additional modern cargo ships and special types to create a well rounded and adequate merchant marine. Most of all, we need to undertake a sound long-range ship construction program so as to eventually achieve a normal age pattern for our ships in service and eliminate the possibility of finding ourselves with an old, obsolete and inadequate fleet at the very time the need for an adequate merchant marine is vital. If that time comes, we will not again, as twice before, have time, distance, and allies, to protect our feverish efforts to prepare against an emergency. It will be already upon us. By getting ready now, we may prevent that next time, but in any event, we will be ready.

FROM
FLOOR-TO-FLOOR



WITH EASE AND SPEED
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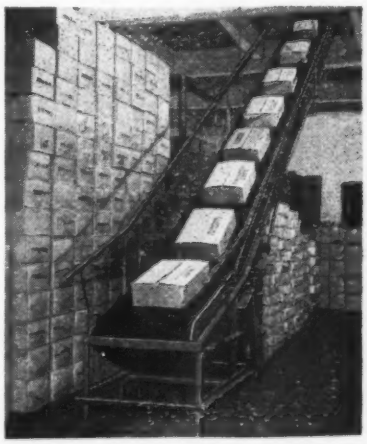
BELT CONVEYORS

These economical, efficient Floor-to-Floor Conveyors for handling packages, cases, cartons, etc. are available in two types: Heavy Duty, with a load capacity of 85 pounds per foot and Light Duty, with a load capacity of 50 pounds per foot. Both types are reversible . . . operate at a constant speed of 45 feet per minute . . . have roller bed construction with rollers "Set High" or "Set Low" . . . are equipped with rough top rubber belt and manual belt take-up for slack. They are available in standard sizes up to 30 inches wide and can be furnished portable or supported from one floor. Write for details.



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PREVENTIVE MAINTENANCE

(*Continued from Page* 40)

inspection uncovers the necessity for repair. Nevertheless, having been on both sides of the fence, I like the more positive and flexible commercial method whereby all inspection steps are grouped according to life expectancy of parts and adjustments and all replacements and repairs, beyond P. M., are definitely recorded. Without that definite separation which automatically records life accomplishment in all types of service, the accurate proportioning of inspection intervals is difficult.

As far as preventive maintenance is concerned, truck parts and assemblies fall into certain life expectancy groups depending on ability to resist wear because of physical properties or dimensions, design or strength of devices to maintenance tolerances, and finally the capacity or capability of cleaning devices to insure uninterrupted operation. Due to factors not entirely within the control of the designer, these groups have a wide-range of life span. These conditions are well understood in the trade, and life beyond certain limits is not expected from any of the units in the various groups. However, with a well selected list of lubricating, tightening, adjusting and cleaning procedures, timed properly for each group, satisfactory vehicle performance is assured under any circumstances. Inspection operations, carefully selected and timed accurately for each group, uncover the necessity for further attention other than the P. M. steps, which automatically arranges to return the part or assembly to a safe working condition.

Although the manufacturer through his engineering tests and service records builds up an experience with each model of his line as to the life expectancy of individual parts and is therefore in a position to select inspection intervals fairly accurately, there are other factors that must be considered if the proper P. M. procedures appear in every contract he accepts. He must also analyze those factors pertaining to the customer's transportation operation.

This is a function of the manufacturer's service group and the final burden of selecting the additions or modifications of the standard plan falls on the service manager. To assist him in making his final analysis, the sales group prepare from information gathered from the customer a form identifying the vehicle, outlining briefly its important specifications, indicating present and anticipated annual mileage, also pertinent facts regarding the operation and speeds, condition of roads, size of loads and length of daily hauls.

Total anticipated accumulated mileage annually is the factor that will generally have the greatest bearing on the frequency of inspection intervals. All preventive steps, in all maintenance plans, are similar because they are all fundamental, and therefore the frequency of inspections is the controlling medium in arriving at an economical and adequate annual schedule. Although annual first year mileage may be low, it must not be forgotten that the schedule for subsequent years must be expanded to provide for the accumulated mileage. Increased mileage calls for heavier inspections if the P. M. plan is an economical one.

Another important angle in designing an inspection operations sheet that is often overlooked is the sequence of procedures. The natural sequence of procedures is generally maintained by listing the mechanical steps from the front of the vehicle to the rear on one side, and from back to front on the opposite side. Using those invaluable experiences regarding our own product, gained through engineering tests, technical service reports and P. M. results in the field, together with comparative P. M. results with other competitive vehicles, we have determined the average maximum life expectancy of adjustments, parts or units of vehicles under normal operating conditions. Within reasonable limits they fall into five maximum mileage groups, meaning that lesser mileage, but never more, can be applied to any group. With this information established, we have assigned the inspection procedures required to assure the satisfactory performance of certain parts and units to each of the five groups.

Lubrication, because of its basic importance to the entire idea of preventive maintenance procedure, becomes the first consideration in our plan. For easy identification we call it Operation "L." Further, because in the commercial scheme, contact with the vehicle, due to circumstances beyond our control, is at times intermittent and not continuous; we set the lubricating periods at the 2,000-mile maximum mileage point in every contract. As an additional provision in the case of low annual mileage city operations, we stipulate also that the period shall not exceed 30 days. We also recognize that under the most critical conditions there are certain units that may require attention at this same low mileage interval, and for this reason we include the inspection of such units as battery, air reservoir, lights, mirrors and signals, cab glass and interior, radiator and tires. The entire time involved is reasonable and we do not consider overservicing as a serious possibility.

We have arranged the units with the shortest life expectancy or those that will require attention most frequently into the first group or Lubrication Operation "L." Those in the next frequency group or second group we designate as Operation "A," on into the third, fourth and fifth groupings which are known as Operation 'B," "C," and "D."

Again flexibility is maintained in two ways:—first, by combining all inspection procedures of the first group into each succeeding group and second, by identifying

(*Continued on Page* 79)

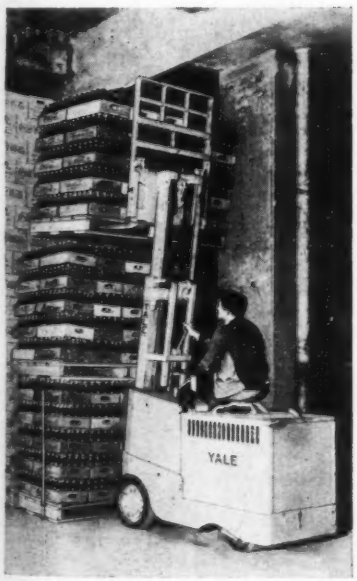
TRUCK TONNAGE

(*Continued from Page* 24)

scale which shows the percent rate of growth by the slope of the curve.

The number of truck registrations reported by the California Dept. of Motor Vehicles is also shown on the chart for comparison. The rise in registrations from 1929 to 1939 closely followed that of the tonnage index. Thereafter, the increasing mileage and loading per truck, together with wartime restrictions on the manufacture of trucks, caused registrations to lag far behind tonnage. Despite the record sales of new trucks in 1947, the truck registration figures still understate growth in actual tonnage by a wide margin. The ton-mile index presented here is therefore believed to be the best regional measure of the prodigious growth of this industry.

High Bottle Tiering



Two simple devices greatly simplify the effective and safe handling of palletized cases of Coca Cola. Brackets secured to the outside runners of the pallets allow posts to be inserted to prevent cases stacked above from falling off. Cleats secured to the ends of the upper faces of the pallets raise the edge of the stack slightly and tilt it inward, preventing sliding off.

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EXTENDS to 10 ft. Always the right length for your particular need.

CONTRACTS to 3 ft. Light and compact. Takes little storage space.

CURVES around corners. Split rollers keep boxes on without side rails.

TWISTS into "S" turns. Adaptable to your present plant layout.

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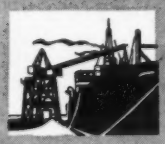

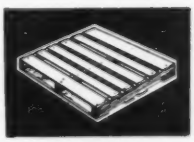

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HANDLING STANDARDS

(*Continued from Page* 31)

telling you, I'm getting dizzy!"

Witness F (accountant):—"Our new materials handling program has paid off fine, *but* it's costing a lot more than it should."

These witnesses, and others that could be called, are in complete agreement on one point: materials handling is less efficient than it should be and there are many headaches and difficulties resulting from the lack of standards.

Such being the case, the next step is to look for the culprit. Are there sinister forces operating to combat standardization? It seems hardly likely. There is no single reason for the lack of standards and no individual, company, or group of companies on whom the blame can be apportioned. Consequently there is no simple answer and no simple solution for the lack of materials handling standards. If culprits there be, they are intangible factors, somewhat as follows:

NEWNESS. In almost all industries, standardization is preceded by an hectic period of flux. Before settling down to the responsibilities of maturity, most industries have their periods of uninhibited youth. One could hardly expect standards in the television or helicopter industries, since both are too young and too changeable for standardization. Thus, in many instances, lack of standards and youth are concomitant conditions. However, "youth" is a rather indefinite term. The indiscretions of a forty year old playboy can hardly be excused on the basis of his youth. The same can be said of materials handling. Although fork lift trucks do not antedate the first World War and the major developments in materials handling techniques have occurred in the past decade, it can justifiably be argued that the period of adolescence has passed and that maturity and accompanying standards are long overdue.

LACK OF AGREEMENT. Lack of standards is not unique to materials handling. Even in so basic an industry as steel, truly national standards did not appear until 1941 when steel producers joined with steel consumers to publish the first list of AISI-SAE standard chemical compositions for steel products. More than 50 years of steel making plus the pressure of World War II were necessary before agreement on standards was forthcoming. In all fields of endeavor the development of standards is a slow process, because it must perforce be based on the difficult-to-attain foundation of agreement not only between the producers of handling equipment but between buyers and sellers.

LACK OF STANDARDS MACHINERY. Before there can be acceptable materials handling standards, there must be a national group charged with their development and promulgation. Since the Electric Hoist Manufacturers Assn., the Electrical Industrial Truck Assn., the National Assn. of Lift Truck and Portable Elevator Manufacturers, the Electric Overhead Crane Institute, the Conveyor Equipment Manufacturers Assn., the Locomotive Crane Manufacturers Assn., and others in the field of materials handling equipment represent only manufacturers, none of them are in a position to develop standards which will include all points of view. A similar condition would exist in the automotive industry if, instead of the one SAE, there were twenty or more standards bodies all representing minute segments of the industry. There is no counterpart to SAE in the field of materials handling. The newly developed Material Handling Institute, which does represent diverse interests, has not as yet entered into the standards picture.

FEAR OF STANDARDS. Far too often, the word "standard" conjures up a mental picture of peas in a pod. To many individuals, standardization seems to mean that all fork lift trucks, cranes, hoists, conveyors, etc., will look and be exactly alike. This is of course far from the truth: standardization merely channels product design and product capabilities into paths that lead to maximum good for both consumer and producer. If standards do impose restrictions, they are usually in the areas of maximums and minimums. No standard would tell a manufacturer that he must fabricate forks of such and such a material or design. The standard might indicate overall dimensions and possibly might limit minimum strength; however, it would not prevent manufacturers from producing a stronger, cheaper, or more ingenious type of fork. There is little justification for believing that standards inhibit progress and development; time after time it has been found that progress is encouraged rather than hampered by standards. For example, with the standardization of chemical compositions for steel in the above-mentioned AISI-SAE standards, industry was able to go one step further and develop the H steels (those specified in accordance with physical property limitations). Without the earlier standard, the H steel specifications would not have been developed as soon.

ECONOMIC FACTORS. Frequently standards result in some temporary hardships. In some cases, the introduction of standard products entails the need for new dies, fixtures, and tools to manufacture the new product. Often, new manufacturing, marketing, and distribution techniques may be required for newly standardized products. These and other economic factors are important; however, experience has shown that losses and inconveniences are often far fewer than anticipated. Production changes necessitated by new standards can almost always be made on a sound basis without too much hardship. Inevitably, the initial hardships are compensated for by greater efficiency,

less waste, and all the other benefits of standardization.

LACK OF PROGRAM. Before standardization can be undertaken successfully, the extent of standardization must be determined; otherwise, all standards efforts will be doomed to failure. The automotive industry has never attempted to standardize appearance and design of cars. SAE has limited itself to predetermined areas and has established standards committees to work therein. Thus, ferrous and non-ferrous metals have been standardized, but fabrication methods and uses for these metals have not been considered. The extent and degree of standardization by SAE has been determined in advance, the total standards task and various tasks therein have been outlined. All efforts and energies are expended within the limited framework. Committees do not work at cross-purposes: each committee contributes to the attainment of its own immediate goal and toward the attainment of SAE's overall standards goal.

Such delineation is lacking for materials handling standards; hence, all standards efforts undertaken by diverse standards bodies are almost always destined to fail. For example, if the height of the platform on a high-lift truck is made standard, little is gained unless skids are similarly standardized. If forks are standardized, pallet dimensions must logically be based on the same standard. As in the automotive and many other industries, there must be generally overall planning before materials handling standards are undertaken. In addition, there must be one central body charged with all standards activities or charged with unifying the standards activities of diverse associations and societies in the field.

Before discussing what should be done to improve standards for materials handling devices, an examination of what has been done might be in order. Listed in the accompanying chart are existing standards and specifications for materials handling devices. Limited as the list may be, it contains many useful standards which will

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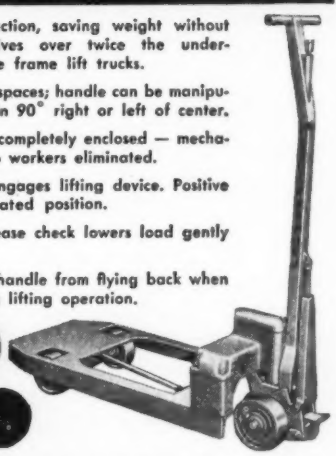

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From the present situation it can be deduced that two paths are open for the development of needed materials handling standards. They are: (1) establishment of procedures for developing standards within the Material Handling Institute or some other horizontal group, or (2) utilization of existing standards machinery in the American Standards Assn.

In the former instance, a complete organization will have to be established. A central committee representing all who are interested in standards will have to be formed. The committee will need to prepare an overall standards program in which all subsequent activities are delineated.

ASA is now being used by several industries for the purpose of developing national standards. The electrical industry is a case in point. Within the framework of ASA is an Electrical Standards Committee on which are represented the American Institute of Electrical Engineers, American Society for Testing Materials, American Transit Assn., Assn. of American Railroads, Communication Group, Electric Light and Power Group, Fire Protection Group, Institute of Radio Engineers, National Bureau of Standards, National Electrical Manufacturers Assn., and the Army and Navy Departments. As can be seen, all divergent points of view are represented. The purpose of the committee is to decide on those areas of the electrical industry to be standardized. For each standards project a special committee is set up. One such committee is that on Regulations for Electric Wiring and Apparatus in Relation to Fire Hazard. The scope of the committee is clearly defined and on the committee are represented all who are interested in the subject to be standardized. All points of view are represented so that all possible arguments, pro or con, on a standard will be aired before the standard leaves the committee. Since such is the case, the standards so developed will more likely be acceptable to ASA members and others who will use the standard in their businesses.

The use of the ASA standards machinery for the development of sound materials handling standards is but one approach that might be followed. Whether the immediate future will see the development of a Materials Handling Standards Committee within the framework of ASA remains to be seen.

Further inquiry into procedures used in ASA for developing standards is of pertinency here because ASA methods are to a considerable extent typical of standards-developing machinery used by other standards groups. Thus, an explanation of ASA procedures will to a considerable extent explain procedures used by the Assn. of American Railroads, the Assn. of State Highway Officials, and other standards bodies whose standards will be discussed in forthcoming articles.

Sectional Committee Method. When a project for a standard or a group of standards is approved by the ASA Standards Council, a Sectional Committee is organized. Committee members must be approved by the Council, which bases its acceptance or rejection of proposed members on the following criteria: (a) the member is competent and an authority in the field, (2) committee members are adequately representative of those substantially concerned with the proposed standards, and (c) adequate balance exists among general classifications of ASA members. The last point insures that consumers, producers, government, engineering societies, labor unions, insurance companies, and all others who are concerned with a subject to be standardized will have a voice in the development of the standard.

At its initial meeting, the Sectional Committee elects officers, outlines its objectives, and designates sub-committees to do the actual work on developing sections of the proposed standard. After the various sub-groups have completed their work, and after each sub-committee presents a draft of its work to the Sectional Committee, a draft of the standard is prepared. The draft is distributed to all who may be interested by mail and by publication of the draft in appropriate trade publications. Comments, suggestions, and criticisms are studied by the committee and pertinent points are embodied in the final draft of the standard. If the committee functions under the administration and direction of one or more sponsoring bodies, the final draft is submitted to the sponsor for approval. If approved by the sponsor, the standard is then submitted to ASA for final approval and subsequent publication as an American Standard. Standards developed in this manner are said to have been developed by the *administrative sectional committee method* as contrasted to standards developed by the *autonomous sectional committee method.* The latter is used when the committee has no sponsor and works directly under the guidance of ASA.

The Existing Standards Methods. A standard developed by another organization may be adopted as an American Standard without going through the long procedure outlined above, provided the standard is deemed to be acceptable to members, was properly formulated, has been used widely, and does not conflict with existing ASA standards.

General Acceptance Method. This procedure is used for simple projects where the long-term sectional committee method is not deemed necessary. Here the standard is developed at a conference of those substantially concerned and approved by others outside the committee who are equally as much concerned.

Proprietary Method. This method is used for revising existing ASA standards and is employed when any responsible body has a position of preeminent importance in the field of the standard. The standard so revised is subject to approval by ASA.

All standards are automatically subject to review and revision every three years.

MAINTENANCE

(*Continued from Page 74*)

each new item added to each succeeding group, by prefixing a star. In other words, "A" includes "L,"—"B" includes "A" and "L"—and "D" contains all of the steps in the five groupings. Further, a star precedes all of the items in "B" that are not included in "A"; the same being true of those in "D" that are not found in "A," "B" and "C."

Combining operations and performing as many as five operations at one appointment is simple with this method. This scheme also allows the mechanic to make all inspections by following one inspection form, which also provides a proper sequence to be followed. Identifying each new item added to an operation allows modification to fit any variation in circumstances by simply eliminating certain named items in an operation and noting the change in the annual schedule. Too, an operation can be split, doing part at one mileage and the balance at another, by crossing out procedures in the form used at any appointment. As an example, a typical schedule for an abnormal truck operation of 25,000 miles a year would require the following twelve operations annually, one each month, but not more than 30 days apart, in the sequence shown:

Operations "A," "A," "B," "A," "A," "C," "A," "A," "B," "A," "A," Modified "D." In terms of individual groups it would actually receive: 12 "L's" or lubrication operations, 12 "A's" or the short-lived group, 4 "B's," 2 "C's" and 1 Modified "D"—all of the above combined into a schedule of twelve monthly operations.

The above recommendations are based on the following group life expectancies, in terms of maximum mileage: L—2,000 miles maximum, A—4,000 miles maximum, B—20,000 miles maximum, C—40,000 miles maximum, D—50,000 miles maximum.

The selection of the proper inspection procedures or items to be inspected, assigned to each frequency group or operation form, is the most important single phase of the whole plan. In the Number I Group, or lubrication group—Operation "L"—maximum mileage 2,000 miles or 30 days, we include:

1. Lubrication of all points of the chassis (including all accessories).
2. Inspect all units for oil level.
3. Fill radiator (test antifreeze in season).
4. Refill battery with water.
5. Inspect and lubricate all cab doors and hinges.
6. Clean interior of cab and cab glass.
7. Inspect all lights, mirrors and signals.
8. Inflate tires to proper pressure.
9. Drain air reservoir.

The next inspection is the Number II Group or Comparatively short-lived group—Operation "A"—maximum mileage 4,000 miles. This form includes those parts or units that will need attention at frequent intervals in order to as-

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sure satisfactory results, not only because of the proper functioning of one unit alone but often due to its important functions in relation to other units. As an example: battery condition beyond "low water" may affect the entire electrical system, and belt adjustment beyond the actual condition of the belt itself may affect the satisfactory operation of the water pump, generator and air compressor.

The selection of units in every group therefore may depend not only on the conservative estimate of the life span of the unit or part alone, but on the relative importance of insuring the satisfactory operation of other units.

In Operation "A" the first five items we consider visual inspections only; in the case of the following five items, the first step is a visual check, followed by an adjustment if necessary. All of the visual inspections can be made in the cab during a 5- or 10-minute test run.

Operation "A" includes the following steps arranged in the proper sequence:

1. Oil pressure, inspect idling and maximum with engine hot.
2. Speedometer—check for proper operation.
3. Instruments — all — check for operation.
4. Horns and windshield wipers—check.
5. Switches—check—all.
6. Choke assembly—check for operation—adjust if necessary.
7. Clutch, adjust if necessary —pedal lash 1 inch to 1¼ inches.
8. Brake (hand)—check—adjust if necessary.
9. Belts—adjust if necessary —½ inch to ¾ inch deflection between pulleys.
10. Generator charging rate—inspect, reset if necessary.
11. Distributor points—clean, dress and adjust.
12. Spark plugs—remove, clean, adjust and test.
13. Fuel pump—tighten—clean bowls.
14. Carburetor—tighten bolts, clean screens, inspect for leaks.
15. Air cleaner—clean and re-oil—refill oil bath type.
16. Governor—check operation —reset if necessary.
17. Engine idling speed, adjust—350-400 R.P.M.
18. Cylinder head nuts or cap screws—check with tension wrench.
19. Oil filter—replace cartridge—drain and clean case.
20. Oil level—check all units.
21. Chassis—lubricate complete—use Operation Sheet "L"—change engine, axle or transmission lubricant if necessary.
22. Battery, check—should read 1.275 to 1.300 recharge at 1.225.
23. Rims and wheel stud nuts (front)—check and tighten —true-up wheel rims.
24. Toe-in—check, adjust if necessary—inspect tie-rod and drag-link ends.
25. Rims and wheel stud nuts (rear) check and tighten—true-up wheel rims—tighten axle stud nuts.
26. Brake (Service) check fluid level—adjust if necessary.
27. Tires—inspect for cuts, bruises and other irregularities.
28. Hoods, fenders, running boards, etc.—check for tightness and condition and report.

In Operation Form "B" we include not only those inspection procedures called for in both Operation "L" and Operation "A" but additional items with a life expectancy of 20,000 miles, each prefixed by a star and all arranged in a new sequence. The starred items read as follows:

1. Vibration damper—check and tighten if necessary.
2. Distributor—lubricate according to Manual.
3. Condenser—check with analyzer.
4. Coil—check with analyzer.
5. Crankcase ventilation system—clean.
6. Oil filler cap—clean.
7. King pins and bushings—check and report.
8. Springs, shackles, pins, bushings and brackets (front)—check for broken leaves and center bolts—tighten clips and U-bolts—check for wear and looseness.
9. Steering mechanism—check, adjust if necessary.
10. Springs, shackles, pins, bushings and brackets (rear)—check for broken leaves and center bolts—tighten clips and U-bolts—check for wear and looseness.
11. Fifth wheel mounting—tighten.
12. Windshield and lights—check and clean.

With the completion of the "B" operation, at which time 40 individual inspections were made, the next frequency group, "C," has been arranged with a life expectancy of 40,000 miles. The same identification of the new items occur and the list reads as follows:

1. Clean engine.
2. Gear shift mechanism—check.
3. Radiator, water pump and lines—check for leaks—tighten mounting bolts.
4. Fuel pump—check vacuum and pressure.
5. Distributor—clean, check and adjust with analyzer.
6. High tension wiring—check.
7. Ignition primary terminals —tighten.
8. Timing—check, using timing light.
9. Starter—check brushes and operation.
10. Regulator, relays and connections—check.
11. Manifolds and exhaust system—all—check and tighten.
12. Compression in each cylinder—check with compression gauge.
13. Carburetor—clean, readjust.
14. Battery cables—check, clean and tighten—apply vaseline.

15. Valve tappets—check for clearance.
16. Oil leaks in engine—clean, tighten oil pan and bell-housing.
17. Differential to housing—tighten.
18. Propeller shafts—inspect for worn joints, tighten bolts, report wear.
19. Gas tanks, vents, lines—check.
20. Flexible hoses—all—check condition.
21. Brake system—all types units—check supply tanks, master cylinder, connections, reserve tank, valves, slack adjusters, air compressor, vacuum unit—check and lubricate.
22. Body bolts, cab mounting bolts—tighten.
23. Wheel bearings (front)—remove, clean, repack, and adjust—check brake lining for wear, wheel cylinders for leaks and drums for scores. Check oil seals.
24. Wheel bearings (rear)—remove, clean, repack and adjust—check brake lining for wear, wheel cylinders for leaks and drums for scores. Check oil seals.
25. Bumpers—tighten.

The "C" Operation requiring 62 individual inspections (wherever possible preliminary operations in preceding groups are combined) is followed by the final "D" Operation, which contains the longest life group with an expectancy fixed at 50,000 miles. While there are but six new items in Operation "D," they are important to the plan and certain items are often called for in schedules of comparatively low mileage. The list reads as follows:

1. Cooling system—reverse flush.
2. Oil pan—remove, clean, check condition of engine, clean pump screens—report.
3. Engine supports and brackets—check and tighten.
4. Transmission cover—remove, check bearings and gears.
5. Rear axle center—remove, check tooth contact and backlash and general condition—report—adjust if necessary.
6. Radius rods—check and tighten.

To insure a complete record of each step in the performance of our obligation to provide a satisfactory P.M. program for the owner, all inspections completed are checked on the form by the mechanic, and those not completed and therefore in need of repair are also checked. The "need attention" items are performed by another mechanic on a new repair order.

All of the checking steps indicated in the inspection forms, "A" to "L," are phrased in a manner that is intended to describe the limits, from the standpoint of the labor hours involved, of each procedure. This method is necessary to the overall plan for two reasons: the annual contract price of P.M. to the customer is based on the number of hours required to perform a satisfactory service, depending on his individual transportation requirements; and the accumulated repairs or "need attention" items, beyond the actual P.M. steps, become a record by inspection interval and frequency group which denotes the necessity for increasing or decreasing the mileage factors of individual customer procedures. If due to operating peculiarities or conditions or the inclusion of certain inspections in the wrong interval group, because of such peculiarities, an analysis of the record will dictate a change in the schedule or the modification of an operation.

To eliminate deviations from this planned procedure we provide an instruction sheet which describes all the mechanical procedures required by each inspection step in the program and positively separates preventive maintenance from replacement and repair by printing the P.M. steps in black and the repair steps in red. We use this sheet also as a training medium for P.M. mechanics.

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FREIGHT RATES

(*Continued from Page* 42)

The principle underlying rates based on the actual value of the commodity is that articles covered by different groups of valuation are in fact so different as to constitute in effect different commodities."[2]

"For instance?" suggested Clark.

"Take wool waste, for example," McCormack said. "The classification provides for three ratings, based as follows: Actual value not exceeding 6½c. per pound; actual value exceeding 6½c. per pound but not exceeding 20c. per pound; actual value exceeding 20c. per pound. You see the distinction? In some instances it is reasonable to make varying rates on the same commodity, dependent upon the value thereof.[3] This is true in cases where there is a wide range of actual value in the different grades or qualities of the same article. The commission has approved different ratings on the same commodity graded according to actual values.[4] The right of a carrier to base its rates upon value has been always regarded as just and reasonable. The principle that the compensation should bear a reasonable relation to the risk and responsibility assumed is the settled rule of the common law."[5]

"Suppose a shipper does not declare the actual value in the bill of lading when making a shipment, and thereby pays a higher freight rate than actually could be obtained, what happens?" Clark challenged.

"Valuation restrictions in connection with actual-value rates are to be given effect in applying the rates," said McCormack.[6] "On the other hand, in 102 ICC 243, the commission said: 'When a tariff carried rates based on value, together with higher rates on the same commodities without reference to value, and the shipper made no reference to value in billing, the higher rates charged were found legally assessed, since rates graded according to value were not released rates but actual value rates, and the restrictions in connection therewith were not void.' From this it is evident that shippers are expected to know the terms of the tariffs. In 147 ICC 373, the commission declared: 'Failure to notify shipper that there were in effect alternate rates dependent on actual value does not establish unreasonableness of the higher rate charged, if such rate was applicable.' Again in 41 ICC 732 they ruled: 'When the carrier's agent failed to advise the shipper in accordance with a tariff rule, of different classifications based on invoice values, but the shipper knew of this rule, and the rate charged was legally applicable regardless of the actual value, the rate charged was not unreasonable.'"

"How do actual rates differ from released value rates?" Clark persisted.

"The phrase 'released rates' has come to be a term applied to contracts of shipment containing in one form or another an agreement to adjust a loss or damage upon the basis of an agreed or declared value," McCormack said.[7] "There is a clear distinction between rates as to which a declaration of value is required as a released value, and those where the declaration required is the actual value of the shipment, the principle underlying the latter rates being that articles covered by the different groups of valuation are in fact so different from a transportation standpoint as to constitute in effect different commodities. In actual-value rates there is no holding forth of an offer to transport goods of higher value at lower rates in consideration of release of the carrier's liability, and the value declared is not given as a measure of the carrier's liability, but as a part of the necessary description of the goods."[8]

"Let's see if I understand," Clark commented. "The value declared by a shipper on goods covered by an actual value rate is a definite part of the bill of lading description. This enables him to obtain a lower freight rate than might otherwise apply. Where a shipment moves on a released value rate, the shipper has a choice of rates in consideration of releasing a carrier as to amount of liability in case of loss or damage."

"Yes," acknowledged McCormack. "There are commodities as to which rates and ratings dependent upon declared or released values are proper and desirable.[9] When authorized or required by the commission, rates based upon declared or agreed values are sanctioned by the Interstate Commerce Act.[10] The law requires that an agreement for released rates be in writing, and the bill of lading contains a provision for that purpose."[11]

"From what you have just said I take it that released value ratings and rates must be authorized by the commission," said Clark.

"You are correct," McCormack responded. "Whenever a rating or rate is based on released value, reference is made to an ICC released rate order. It is not all rates in connection with which a declaration of value in writing by the shipper may be required that are within the purview of the second Cummins amendment, but only those where the valuation is thus declared or agreed upon as the released value of the property.[12] Any attempted limitation of the shipper's right of recovery for actual loss, damage, or injury to property received for transportation is 'declared to be unlawful and void' except when the limitation is published under an order of the commission."[13]

"Do the courts support the idea of released value rates?"

"Yes, indeed," McCormack asserted. "As evidence let me quote the following from 226 U. S. 491, 57 L. ed. 314, 33 S. Ct. Rep. 14[illegible]

in which the court said: 'The liability imposed by the Carmark amendment was that imposed by the common law, which could be limited or qualified by special contract, provided the limitation or qualification was just and reasonable, and did not exempt from loss or responsibility due to negligence. The commission recognizes that a carrier's rate may be graduated by value, and a stipulation limiting recovery to an agreed value made to adjust the rate.' "

"In that citation," Clark observed, "mention is made of carrier negligence. Isn't it difficult for a shipper to prove carrier negligence on a shipment moving under released value rates?"

"Surely," McCormack agreed, "but a lot of shippers fail to realize it. To illustrate: On Sept. 19, 1947, the Georgia Court of Appeals handed down a decision in which the carrier was held liable for full loss or damage although the shipment moved under a released value rate. Many persons jumped to the conclusion that the shipper had proved negligence on the part of the carrier. That's not my understanding of the case. As I read the opinion, it appears to me as if the freight rate was the deciding factor."

Jack went on to say that in the case just mentioned, where the court upheld the shipper, the carrier in effect had published but one rate and one valuation, thereby making it impossible for the shipper to make a selection of rates. It was a situation where there was no other rate available, contrary to the terms of Section 20 (11) of the Interstate Commerce Act. There must be an opportunity to use alternate rates where released valuation is involved. Then he added: "This is clearly brought out in a positive statement in 241 U. S. 319, 60 L. ed. 1022, 36 S. Ct. Rep. 555, where the court said: 'When alternate rates fairly based upon valuation are offered, a railroad may limit its liability by special contract.' "

Pausing for a moment, he continued: "So you see, a carrier must publish alternate rates if it is to limit its liability as to valuation. Where such rates are available a shipper must abide by the contract. It is neither just nor reasonable that the shipper shall benefit by the lower rate and then recover for a value which he said did not exist in order to obtain that rate. Having obtained a rate based upon the declared value, there is no room for parol evidence to show otherwise."[14]

Clark looked up and asked, "In the event a shipper fails to sign the valuation clause in his bill of lading, would that place full liability on the carrier?"

"Not at all," McCormack declared emphatically. "Where the blanks in a bill of lading for valuation by the shipper were left unfilled at execution, but the rate charged and inserted in the contract was in accordance with the carrier's tariff, as applied to the primary valuation, these were the valuations adopted by the parties, and the carrier's liability was limited accordingly."[15]

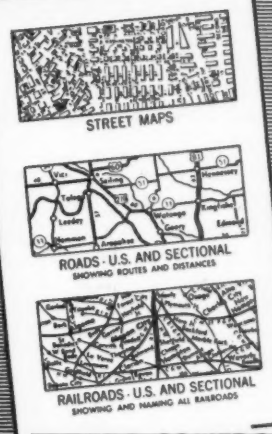
"Jack, early in our discussion you mentioned some of the products moving under actual-value rates. What kind of articles move under released value rates?"

"Rather a lengthy list," McCormack rejoined, "but I'll mention a few. Among the released value commodities are: hides, pelts, or skins; leather scrap; household goods; restaurant or hotel kitchen equipment; raw silk, and rugs. The classification ratings are based on declared value authorized by the ICC under released rate orders."

"You included rugs in that list. Are carpets also shipped under released value rates?"

"No," McCormack said, "and that gives a clue as to the reason some products move under released value rates whereas others do not. As for rugs there are many grades and values, in some instances running up into thousands of dollars each, as in the case of oriental rugs. Therefore, it is necessary for the carriers to limit their liability when accepting certain kinds of rugs for transportation. This does not apply to carpets which fall within a reasonable limit as to value when averaging the various grades."

CLEARTYPE MAPS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"Rugs, but not carpets, move under released value rates," mused Clark. "I suppose lamps, for example, are shipped subject to released value rates?"

"Nope," chuckled McCormack. "As lamps do not combine a high susceptibility to damage with a wide range in value, they are not in a class of freight for which released ratings and rates would be proper."[16]

"Getting back to the question pertaining to rugs, how are they grouped as to valuation?"

Jack picked up his copy of the freight classification and examined the index. He then turned to the specified page and item and read aloud:

"'Rugs, n. o. i. b. n., less carload. If not exceeding $125 per 100 lb., at first class; if exceeding $125 per 100 lb. and not exceeding $200 per 100 lb., at one and one half times first class; if exceeding $200 per 100 lb. and not exceeding $300, at double first class; if exceeding $300 per 100 lb. at three times first class; if consignor declines to declare the value or agree to released value in writing, not taken.'"

"I presume you used the exact words of the classification when you said 'not taken' if the shipper declines to meet the requirements," Clark said.

"Yes," answered McCormack. "Also understand this, please. On other released rate items similar conditions apply. Rugs merely provide us with a general illustration for other commodities moving on released value rates. But, reference to the classification should be made for each specific article."

"Assume that a shipper specifies a lower value in a bill of lading in order to secure a lower rate where valuation is a determining factor," Clark hinted.

McCormack smiled. "Where different rates depend on value, undervaluation is in the nature of false description of property.[17] If carriers could lawfully base rates upon declared value, the value declared would be a part of the description of the commodity, and the shipper who by undervaluing secured a lower rate than he was entitled to would be guilty of a violation, and, by claiming full value in case of loss or damage, would subject himself to prosecution."[18]

"Probably now and then some shippers try to get away with it," Clark remarked.

"Unfortunately, yes," McCormack stated. "As evidence I'll read an extract to you from an annual report of the commission." Jack quoted the following:

"'In misbilling cases it is common for shippers to plead guilty, to escape with a smaller fine than would result if the cases were contested. The courts have imposed substantial fines in cases of this kind when the defendant admitted his guilt.'

"Of course," McCormack cautioned, "released valuation was not involved in all those cases, but it shows that misbilling, misdescribing, and undervaluing does not pay when preparing a bill of lading."

"What recourse does a shipper have if he considers the released value or actual value terms too severe?" Clark inquired.

McCormack gave consideration to the question and then said: "The only remedy open to a shipper for unreasonable charges, exacted according to the tariffs regularly filed, under a scale increasing with the value of the commodity, would be by proceedings protesting the reasonableness of the charges before the commission. While they were in force they were equally binding upon the railroad, and all whose property was transported."[19]

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[1] 100 ICC 471
[2] 123 ICC 545
[3] 31 ICC 311
[4] 44 ICC 578
[5] 227 U. S. 639, 57 L. ed. 683, 33 S. Ct. Rep. 391, reversing 91 Ark. 97
[6] 115 ICC 105
[7] 227 U. S. 639, 57 L. ed. 683, 33 S. Ct. Rep. 391
[8] 102 ICC 581
[9] 54 ICC 1
[10] 83 ICC 255
[11] 147 ICC 535
[12] 100 ICC 471
[13] 100 ICC 471
[14] 227 U. S. 657, 57 L. ed. 690, 33 S. Ct. Rep. 397, reversing 128 S.W. 932 (Tex. Civ. App.)
[15] 244 U. S. 58, 61 L. ed. 990, 37 S. Ct. Rep. 595, reversing 250 Pa. 527
[16] 150 ICC 327
[17] 29 ICC 109
[18] 69 ICC 235
[19] 233 U. S. 97, 59 L. ed. 868, 34 S. Ct. Rep. 526, reversing 209 Mass. 598

Books and Catalogs

ANALYSIS OF WORKMEN'S COMPENSATION AND DISCUSSION OF COVERAGES, 33-p. booklet, contains 14 charts condensing pages of laws into simple statements; answers questions confronting employers and business concerns in connection with workmen's compensation coverages; can be placed in letter-size file. Chamber of Commerce of the United States, Insurance Dept., Washington 6, D. C.

CASE SEALER BULLETIN NO. 100, 6-p. illus. bulletin, describes the modern features and operation of the Elliott "End-Sealing" machines for fiber and corrugated cases. Elliott Mfg. Co., Fresno, Cal.

CHICAGO'S $1,200,000,000 FOOD MARKET, 60-p. book, gives in one volume comprehensive selling information on America's No. 2 food market. Complimentary copy to food executives, Bob White Organization, 56 E. Walton Pl., Chicago 11.

DIRECTORY OF LOCAL TRUCK OPERATORS OF THE UNITED STATES, third edition, 41-p. compilation of names, addresses and services of leading Local Cartage Operators of the U. S. Local Cartage National Conference, 1424 16 St., N.W., Washington, D. C. F. H. Floyd, Exec. Secy.

THE FOOD INDUSTRY, 20-p. illus. booklet, shows materials handling operations in the food industry, i.e. canning of fish, modern cold storage plants, tiering and moving of palletized case goods, etc., including special attachments for handling various foods. Clark Equipment Co., Tructractor Div., Battle Creek, Mich.

HOW TO USE AND PREPARE GLUES, PASTES AND GUMS, 20-p. revised booklet, contains information on the storage, handling, preparation, etc. of all types of adhesives.

SUCCESSFUL CASE SEALING, 20-p. booklet, gives information as to type of adhesives recommended for sealing export containers.

National Adhesives, 270 Madison Ave., New York City 16.

INDUSTRIAL LOGISTICS, 10-p. illus. booklet, describes heavy duty die handling trucks at work in metal stamping and forging plants, gives principal specifications of truck models ranging from 2,000- to 54,000-lb. carrying capacities. Elwell-Parker Electric Co., Cleveland 14.

LIVES OF LINERS, 244-p. illus. book, by Frank O. Braynard, a personalized and animated story of the world's great ocean vessels, divided into four parts: Superliners, Express Liners, Mail Liners of the World, The Smaller Ships (covering ships of many types). $3.75. Cornell Maritime Press, 350 W. 23 St., New York City 11.

CONSOLIDATED SHIPMENTS

(*Continued from Page* 51)

not experienced with shipping small objects alone to overpack or to "bulk" the size of the outer container, increasing costs generally and inviting damage.

The aim of a successful small package room is to reduce as much as possible the number of "outgoing" singles, or conversely, to send out as many small packages in consolidated shipping units as possible. In this way, expenses are reduced and loss and damage claims resulting from small packages in freight channels, are reduced.

The writer was responsible for installing a small package activity in a large freight activity. There were received daily between 500 and 800 small packages one cube or under in size. These were consolidated within twenty-four hours in packing cases for some sixty to eighty steady destinations with carefully checked consolidated manifests attached. The outgoing containers, while averaging ten units, ranged from three or four to as high as 30 or more.

Prior to the installation of the small package activity, the movement of major cargo in and out was seriously handicapped by small units becoming lost and checkers and shipping clerks losing valuable hours trying to straighten the tangles. After the procedure was set up, every detail of warehousing, checking in and out, preparation of manifests or packing lists, packing and consolidation was handled in the area designated for the activity and the efficiency of the entire terminal greatly increased.

The principle of consolidating small freight is not so different from that of handling mail. There are some offices which still persist in having each desk prepare its own envelopes and seal its own communications.. At the end of the day, the outgoing mailbag may as a result have dozens of pieces of mail for the same branch, agent, supplier, good customer or other address with whom there is constant communication. However, good management engineers and efficiency experts have long called this method wasteful and most progressive concerns today, through a central mail room, to consolidate outgoing mail, sending all pieces for the same regular address in one envelope.

So too with smaller freight. If it is apparent there are great numbers of waybills accumulating for freight units of a few pounds each and there tend to go to a limited number of destinations, then there is every reason to consolidate freight shipments. It is a practical money- and time-saving step; a simplified and coordinated procedure for controlling and consolidating small units in shipping will result in substantial distribution economies.

International Trade Mart

Conversion of a 50-year-old mill-type building to an ultra-modern, streamlined million-and-a-half-dollar International Trade Mart will be completed about July 1 in New Orleans. The building will operate for trade between the Mississippi Valley, Latin America and the world. Flags of the 57 United Nations will fly from the building, and "The International Trade Mart" will stand in 30-in. letters as corner marquees. Inside, products of the world will be displayed in air-conditioned, fluorescent-lighted rooms. Seventy percent of the space has been leased already by companies which will display and sell for transportation anywhere in the world thousands of articles, ranging from agriculture equipment and machines to baby bottles and kitchen equipment. Belgium is the first foreign country to lease space. The mart will be operated as a non-profit institution, in the same manner as International House, now in its third year of existence of promoting international trade and good will.

All of our Pallets are designed and constructed with the same advanced principals and thoroughness you expect of all your materials handling equipment. Our basic specifications call for sound hardwoods, pre-bored slats, cement-coated drive screws and annular ring nails and other features assuring you of Pallets able to stand up under heavy usage.

Special Pallets built to individual requirements

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North American Van Lines, Inc.
General Offices: FORT WAYNE, IND.

MARINE HANDLING

(*Continued from Page* 53)

lighters are towed by tug boats to the pier. If space is available, the lighter is unloaded directly into the ship; if the ship is not ready, the lighter is unloaded on the pier. A cargo checker employed by the line checks the condition and count of every piece of freight taken from the lighter.

2. A good deal of freight is received by rail from the Pennsylvania tracks adjacent to the pier. A spur line leading into the pier and branching out into three tracks in the pier is used to receive rail freight. Cars are unloaded directly by fork truck or crane car when the material is of a nature to be handled by such equipment; otherwise, freight is unloaded with hand trucks or loads are shifted onto live skids or platform trucks. Freight is carried to locations on the pier assigned by the dock boss.

3. Other freight is brought into the pier by motor trucks. The trucks drive up to the location assigned to their loads and the material is unloaded either by hand or by materials handling devices.

When freight is ready to be loaded, gangs of materials handlers are assigned to each hold. One gang works in the hold, another at the port near shipside, and the third works inside the pier. An example of the loading operation can be seen from the following: boxes of apples are stored in the pier. Boxes are loaded by hand into cargo nets. Two nets are used by the gang in the pier. As the first net is loaded, a crane car carrying an empty net arives at the scene. It drops this net, picks up the loaded first net. The crew meanwhile begins to load the second net. Thus, there is always one net being loaded and one to be loaded. The crane car carries the loaded net to shipside, deposits it, and picks up an empty net. The crew at shipside guide the hook of the ship's lift onto the net. The ship's boom lifts the cargo net and lowers it down in the hold. In the hold the third crew receives the loaded net, places an empty net on the hook. The boom carries the empty to shipside and picks up a loaded net, and so the process is repeated. In this way, there is never any work stoppage while waiting for cargo nets. Cargo nets are used for the bulk of cargo; however, slings, grabs, grapples, and other hoisting accessories are used when the material being loaded lends itself to such handling. Cargoes that exceed the 35 ton weight capacity of the ship's booms are loaded into the hold by floating derricks that can handle loads up to 150 tons.

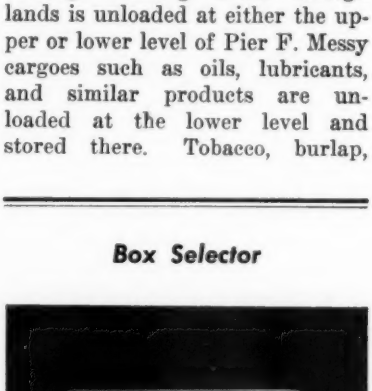
Cargo coming from foreign lands is unloaded at either the upper or lower level of Pier F. Messy cargoes such as oils, lubricants, and similar products are unloaded at the lower level and stored there. Tobacco, burlap, spices, marble, cheese, rubber, tea, and the bulk of the other imported products are carried by ship's boom from the hold to the upper level. Crews of materials handlers operate the same way as when loading the ship. One crew in the hold, another at the pier's ports, and the third handling loads from dock to location in pier. Pier is laid out in avenues and streets with each block numbered and lettered so cargo in storage can be located by referring to its assigned symbol. After freight clears through customs, consignees are notified. Consignee's trucks come to the pier and show their papers to the delivery clerk who turns them over to the dock boss. The terminal staff, after laying out the pier for receiving cargoes, arranges delivery. Freight assigned to freight cars or motor trucks on the lower level are delivered via chutes from the upper level. Materials that cannot be handled in this manner are delivered by elevator to the lower level. Six chutes and seven elevators link the two levels of Pier F.

A section of the upper level is used for storing wines, champagnes, and other products that must be protected from the cold. As soon as they are unloaded from a ship, these products are brought into the wine storage room where hot-air blowers maintain proper temperatures.

Freight that is destined for other railroad terminals is loaded onto lighters by booms controlled from the lighter, or direct from the steamer to lighter when possible.

As can be seen, materials handling at the pier and in the ship is an important phase of the merchant marine. The rapid handling of materials at the American Export Lines Pier F is characteristic of other piers operated by this line and by other American shipping companies. Materials handling on ship as well as on pier is, as it should be, a highly organized and coordinated effort. America's merchant marine strength means newer and better ships and piers; it also means sound materials handling techniques and procedures.

Box Selector



This calculator and corrugated box selector, published by The Fairfield Paper Co., Baltimore, Ohio, gives box users a tool to easily find the basic standards given in Section 3, Rule 41 of the Official Classification. It shows single wall data on one side and double wall data on the other. When the disc is rotated, the various specifications for weight of box and contents, size limitations, etc., for a given test grade of fibreboard appear in the various openings, enabling a shipper to determine exactly what grade of board is required.

L.C.L. AND THE CHAINS

(*Continued from Page* 37)

thorized by the ICC to use their trucks for freight deliveries from metropolitan centers out to the nearby smaller towns.

To help control rail loss and damage, League members often cooperate locally with other shippers in the set-up of loss prevention groups. Toward such control, one rail terminal office has reported that through use of new billing forms and the training of their platform loaders they have cut their "overs" and "shorts" by 50 percent. One League member thinks that rail claims would be better controlled if local railroad station agents could handle their own claim adjustments.

League members frankly admit some previous responsibility for rail shipping damage due to their forced use of poor shipping containers during war and postwar periods when adequate containers often couldn't be procured. The recent rail classification ruling on new packing requirements for furniture, with certain desired modifications, undoubtedly will do much to reduce the previous large damage to this type of shipment.

As for the rail forwarders, it is a debatable question whether they really "got the breaks" in rail services and equipment during the recent troubled transportation years. The chief complaint of League members against the rail forwarders is their usual failure to service equally off-line shipping points, as compared with their top service only between the large shipping centers.

It is the opinion of some League members that one of the most important transportation improvements would be the development of a practical working agreement between the railroads and the motor carriers, in the matter of the divisions of their respective rates, and also as to their respective responsibilities in the settlement of their overlapping loss and damage claims. Such a development would remove one of the present most troublesome problems of a chain store traffic manager. The present necessity of treating rail carriers and motor carriers independently of each other is carried to the point of ridiculousness when it comes to the settlement of a claim or the payment of a freight bill in which they are both involved. Also, it is the opinion of some of our member traffic managers that the services of motor carriers in general would be considerably improved if their present total facilities were combined into fewer and larger operating units, coordinated with rail transportation.

Another very important rail service improvement, long advocated by the Chain Store Traffic League, seemingly could be easily provided. It would be the publication by the railroads of a single, one volume joint rail freight schedule. Such a comparable single book has long been jointly published monthly as the official passenger transportation guide for all the railways and steam navigation lines of the United States. So why not a single volume also for the freight transportation services of all railroads? The League has taken this matter up personally with the present publisher of the national rail passenger service "Official Guide," and this publisher has stated that the issuance of such a "joint rail freight book" for all the railroads of the United States would be entirely practicable.

Many of the individual rail lines of the United States are earnestly trying to develop closer cooperation with their shippers, and the Chain Store Traffic League also has been active in this constructive program.

As a summary statement, each individual traffic manager member of our League of course must continue to give careful attention, when making a shipment, to the selection of the exact type of transportation most suitable for this particular shipment.

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Getting down to *Cases*

By LEO T. PARKER
Legal Consultant

WAREHOUSING

Things You Can Do

YOU CAN compel two contradictory owners of stored goods to settle the dispute between themselves. In C. F. Duke Storage Warehouse, Inc., v. Keller, 55 Atl. 901, N. J., the testimony showed facts as follows: The C. F. Duke Storage Warehouse accepted certain goods and chattels for storage from Essie Keller for which it issued to her a non-negotiable receipt. Later Samuel Keller, the husband of Essie Keller, served notice on the warehouse company that he and not Essie Keller was the owner of the goods and chattels, and notified the company not to permit her or any one acting for her to remove the chattels from the warehouse. Later one Perlstein claiming that Essie Keller had sold the goods to him instituted a replevin suit by virtue of which the sheriff seized the chattels and removed them from the warehouse. Then the husband Samuel Keller sued the warehouse company for damages. The higher court refused to hold the company liable and ordered Samuel Keller, Essie Keller and Perlstein to settle the dispute between themselves.

YOU CAN compel the United States government to comply with contracts the same as ordinary persons. In Federal Compress & Warehouse Co., 74 Fed. Supp. 649, it was shown that the Commodity Credit Corp. and a warehouse company made a contract for reduced rates for storing and handling merchandise. The federal court held that the benefits of reduced rates specified in this contract did not inure to the benefit of the Federal Surplus Commodities Corp. or the Surplus Marketing Administration. This court held that the government is bound by contracts the same as any other person, firm, or corporation.

Things You Can't Do

YOU CAN'T avoid paying a patron the *full* value of stored goods which you legally "convert." Legal conversion is *unlawful* detention of another's property. For example, in Chatterton v. Boone, 185 Pac. (2d) 610, Calif., the higher court held the Boone's Transfer and Storage Co. liable for $2,038.75 and costs in a suit for conversion of household goods which were stored in a warehouse. The goods were *partially* damaged as the result of a fire in the warehouse. The fire was supposed to have been extinguished by the City Fire Department, but within twenty-four hours thereafter it again broke out and further damage resulted, chiefly from the use of a large quantity of water. The owner demanded delivery of the goods, which was repeatedly refused. The only reasons assigned by the warehouse for refusal to deliver the goods to the owner were that the owners of the building had not yet adjusted their claim against the insurance company for damages to their building by the fires and that it was dangerous to enter the building. The goods were saturated with water and remained in that condition for several months, resulting in complete loss. The full value of the goods was several thousand dollars more than $2,038.75. In other words, the owner conceded that she was *not* entitled to damages resulting from the fires because the warehouse was not negligent. However, she claimed and the value of the goods *after* the fires was $2,038.75, and that the warehouse company was liable for this amount because it refused to give possession of the goods to the owner *immediately after* the fires. In holding the warehouse company liable for this amount the higher court said: "An action for conversion of personal property lies against a bailee (warehouseman), who, upon demand, wrongfully refuses to deliver possession thereof to the owner and exercises dominion over the property to the owner's detriment . . . The court properly allowed damages in the sum of $2,038.75 as the value of the property at the time it was wrongfully converted on February 20, 1945, which was after the fires occurred."

PACKAGING

Things You Can Do

YOU CAN hold a carrier liable for loss of or destruction of a shipment legally "accepted" by the carrier's agent. In St. Louis-San Francisco R. Co. v. Lee Wilson & Co., 206 S. W. (2d) 175, Ark., it was shown that a car was on railroad's side track and had been loaded with alfalfa meal, closed and sealed, and a bill of lading issued by the railroad's authorized agent. The higher court held that since the control and possession of the alfalfa meal was surrendered by the shipper to the railroad, the railroad was liable to the shipper for destruction of the meal by fire before the car was moved. This court also held that when a carrier has authorized and permitted a person to sign bills of lading for shipment of commodities, he is a legal agent of the carrier although he is not paid a regular salary.

YOU CAN refuse to pay unemployment insurance to employes who strike or cooperate with strikers. For illustration, in State ex rel. Unemployment v. Martin, 45 S. E. (2d) 385, it was shown that employes known as boarders went on a strike. Their work was continuous and intregrated with others in the finishing department, and all employes in the latter department were unemployed from Sept. 3 through Nov. 6. All employes in the finishing department appealed for compensation under the State Unemployment Act. The higher court refused to award unemployment compensation and said: "Employe claimants were disqualified from unemployment compensation benefits."

Things You Can't Do

YOU CAN'T refuse to reinstate a veteran in the same position or job he had before he went into military service. In Van v. Van and Service, Inc., 162 Fed. (2d) 1007, the testimony showed facts as follows: On being discharged from military service in 1944 an employe applied for reinstatement to his position he had in 1942 at which time he was a foreman in a plant. The higher court held that the corporation must reinstate the employe to his original position and, further, the corporation must pay the employe damages for delay in reinstating him, if the testimony shows that the delay was not caused by the employe's negligence in waiting too long in filing suit to compel reinstatement.

TRANSPORTATION

Things You Can Do

YOU CAN reduce taxes by legally separating or segregating your routes or business operations. For example, in California Motor Transp. Co. v. State, 187 Pac. (2d) 745, Calif., a motor transport corporation operated a pick-up and delivery service in a city, and a highway transportation service between two cities. It completely segregated the two operations and operated them as separate enterprises. The higher court held that the company's receipts for intracity transportation of goods were exempt from a license tax imposed by a state law exempting motor vehicles from taxation which operated exclusively within incorporated cities and towns. This court said further that the fact segregation of the corporation's pick-up and delivery service from its highway transportation business *might* effect a tax saving was not fraud or bad faith.

Things You Can't Do

YOU CAN'T make a freight rebate which the Interstate Commerce Act prohibits although the rebate is not made to a shipper. In Interstate Commerce Commission v. North Pier Terminal Co., 164 Fed. (2d) 640, the court ordered a motor carrier not to pay four cents per hundredweight to a terminal company for services in assembling and handling freight of latter's tenants for shipment even if the payments were not made to a shipper.

MARKETING

Things You Can Do

YOU CAN collect *reasonable* payment for merchandise or services although the contract of sale fails to specify any price. For example, in Los Angeles v. Imperial County, 185 Pac. (2d) 649, Calif., the higher court held that the law implies that anyone who purchases merchandise or applies for services will pay a reasonable sum.

Things You Can't Do

YOU CAN'T avoid being responsible for contracts made by an employe whose contracts *in the past* you approved unless you give notification that the employe no longer represents you. In Sidney Weber, Inc. v. Interstate Motor Freight System, 205 S. W. (2d) 291, Mo., the evidence proved that the Interstate Motor Freight System sold a motor tractor, used in its over-the-road service, to a former employe who continued to operate it with the seller's name thereon. The employe purchased $1,629 worth of merchandise and supplies from a company whose officials believed that the Interstate Motor Freight System was owner of the tractor. In subsequent litigation the higher court held the Interstate Motor Freight System liable for payment, saying: "We are unable to see how Interstate System could expect plaintiff to know that it had transferred the trucks in question to Germer (employer), since it does not even claim that it notified said defendant (company) thereof."

INSURANCE AND FINANCE

Things You Can Do

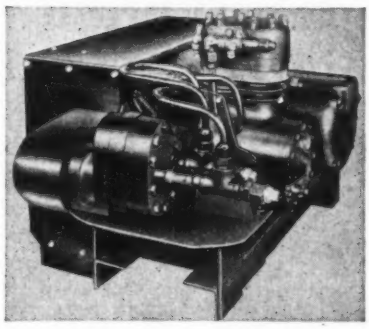
YOU CAN recover back taxes paid by mistake if you notify the taxing authorities within a reasonable time after paying the taxes. In Longacre Park Heating Co. v. Delaware Co., 50 Atl. (2d) 706, Pa., a property owner sued Delaware County to recover realty taxes erroneously paid to the county for the years 1934, 1935 and 1936. The property owner had notified the county officials that these taxes were paid erroneously. Although the county refused to make the refund, and the property owner delayed suing the county until eleven years later, the higher court held that the county must refund the money paid for the taxes.

Things You Can't Do

YOU CAN'T win a Federal tax suit based on a state law. In United States v. Caldwell, 74 Fed. Supp. 114, the government levied on tobacco which had been placed in a warehouse and negotiable receipts were issued for income taxes. The federal court approved the levy although the state's uniform warehousing law prohibits levy upon goods for which a negotiable warehouse receipt has been issued, unless the receipt be first surrendered to the warehouseman. This court held that a state cannot pass a statute which will defeat the United States in collection of taxes.

YOU CAN'T win a suit based on an insurance policy which favors the insurance company. It is well established law that an insurance company is *not* responsible for statements or promises made by ordinary insurance agents, if the insured fails to read the policy and complain to the company *promptly* that the policy does not afford the protection promised by the agent. For example, in Guidici v. Pacific Automobile Co., 179 Pac. (2d) 337, Calif. the testimony showed that an insurance policy contained a clause that the policy does *not* cover property rented to, leased to, in charge of, or transported by the insured. The higher court refused to pay a loss to merchandise left with the insured for repair work.

Hydro-Aire



The Hydro-Aire cooler, a refrigeration unit designed for trucks and trailers requiring low temperatures. The cooler is ice-loaded and air is circulated over the ice and through the truck body about twice a minute. Temperatures can be held at 38 to 40 degrees in the average truck. The units, hydraulically controlled and powered, are the first of their kind on the market. A standby electric motor can be operated by simply plugging in the cord. The machine is manufactured by the Hydro-Aire Corp., Waukesha, Wis.

RATE FOG

(*Continued from Page* 23)

result in overtime and disrupted schedules. The war-built ships are far from suitable. Those having largest capacities are too slow. This creates heavier offshore expenses. Ships of greater speed have less capacity and greater running costs for fuel, etc. It is hoped that with slight profits, the lines will consider alteration to more suitable design of some war-built tonnage. Some operators already have engaged marine architects to work on tentative plans to make possible the reconversion of war-built ships to carry a combination of containers, truck trailers, and freight cars besides liquid bulk cargo in tanks.

The domestic lines, particularly those in coastwise service, are preparing to include more ports of call. Further, many interests along the Atlantic are growing impatient because of the lack of interest in reviving short-haul services. How long the *status quo* will continue is not known. Obviously, the ICC believes that something should be done. In the ICC's 61st Annual Report, it has this to say about the revocation of water carrier certificates or permits:

> "Part III does not provide revocation authority and procedure such as are found in part II and part IV of the act. Statements of the Supreme Court in United States v. Seatrain Lines, Inc., 329 U. S. 424, decided January 6, 1947, indicate that we are without authority to revoke

(*Continued on Page* 122)

DISTRIBUTION BRIEFS

The Baker-Industrial Truck Div., Baker-Raulang Co., has appointed Hooper-Green Co., Indianapolis, district sales representative in the Indiana territory. The Hooper-Green Co.'s main office is in Chicago and the manager of the Indianapolis branch is A. J. Stone who formerly sold related equipment in the same territory.

Bal-Can Warehouse & Storage Corp. has been incorporated in Buffalo, N. Y., with a capital of $100,000. Incorporators are James P. McComas of Baltimore, Lester E. Boyce of Canandaigua, N. Y., and William Palmer of Buffalo.

Mobilift Corp. of Portland, Ore., manufacturer of fork lift trucks, has completed the establishment of factory sales and service branches in Chicago, New York, Atlanta, Dallas, San Francisco, and Los Angeles. Additional representatives are located in Detroit, Cleveland, Cincinnati, Pittsburgh, Buffalo, Boston, Hartford, Philadelphia, Richmond, Charlotte, Nashville, Tampa, New Orleans, Houston, St. Louis and Minneapolis.

People in Distribution

For our readers' convenience, items referring to one person only are arranged alphabetically according to the individuals' names. Company news or changes affecting more than one individual are arranged alphabetically by company names. Association items are similarly arranged.

William E. Brackett was appointed sales manager of Daystrom Laminates, Inc., Daystrom, N. C.

John W. Craig has been promoted to general works manager of Crosley Div., Avco Manufacturing Corp. Mr. Craig was works manager of the Crosley Shelvador refrigerator plant in Richmond, Ind.

Lewis Gordon has been appointed director of the international sales division, Sylvania Electric Products Inc., replacing Walter A. Coogan who has resigned.

Joseph F. Grant has been appointed secretary, Slick Airways, Inc. Mr. Grant is assistant legal advisor to Slick.

Edwin A. Hamala has joined the staff of Jack & Heintz Precision Industries, Inc., Cleveland, O., as advertising and sales promotion manager.

D. D. Hamilton has been appointed manager of the Building Materials Section, Tar Products Div. of Koppers Co., Inc., Pittsburgh.

Leonard F. Hanna has been appointed purchasing agent and traffic manager of Angier Corp., Framingham, Mass.

Sidney G. Harris is now sales manager for Richfield Manufacturing Corp., New York City. He was formerly associated with Liberty Fuel Oil Co., Petroleum Solvents Corp., and Continental Motors Corp.

R. T. Hazell has been appointed sales manager of Fruehauf Trailer Co. of Canada, Ltd., with headquarters in Toronto.

Karl J. Leary has been appointed Airfoam representative in the Chicago district ,Chemical Products Div., The Goodyear Tire & Rubber Co.

William Lee has been appointed district manager of the new Houston, Texas sales office of H. K. Porter Co., Inc., Pittsburgh.

George F. McCall has been appointed sales manager of the Marine Diesel Engine Div., Mechanical Equipment Co., New Orleans, La.

Capital Airlines has appointed **Vance L. Tomlin** as district sales manager in the New Orleans area. **William E. McGarry**, former Navy Lieutenant Commander, has been appointed district sales manager in Atlanta. **George B. Wharton** has been appointed district sales manager, Mobile.

Highway Trailer Co. has appointed **N. J. (Nick) Dubak** manager of the New York branch. **R. K. McLean** has been appointed manager of the company's sales and service branch in St. Louis, Mo.

Hyster Co. has appointed **Fay Brainard** to the newly created position of special assistant to **Eugene Caldwell**, general manager. **Svante Eikrem** has become plant engineer.

Mack Trucks, Inc. has elected **A. C. Fetzer** and **A. N. Morton** as vice presidents. Mr. Morton is in charge of the company's manufacturing operations, and Mr. Fetzer is general sales manager. **F. R. Harrison** has been elected assistant secretary and assistant treasurer of the company. **T. Wroldsen** has been named an assistant secretary. **J. A. Jackson** has become an assistant treasurer.

The Rapids-Standard Co., Inc., Grand Rapids, Mich., has named **James R. Sebastian** president and general manager, succeeding **Lloyd C. Backart**, who was named chairman of the board of directors. Mr. Backart, who was also sales manager, will continue in that capacity to direct merchandising operations and long range planning. He is a member of the 1949 Materials Handling Exposition committee. Other officers elected were: secretary-treasurer, **Roger S. Calvert**; vice presidents, **Paul F. Millett, Howard R. Pearl** and **Robert L. Gunnell**; and assistant secretary and treasurer, **Eugene L. Hummell.**

Reynolds Metals Co. has appointed **Ray W. Christensen** assistant advertising manager, Aluminum Div., succeeding **James C. Bjorkholm**, who was recently advanced to advertising manager of Reynolds Foil Div. **Leon Norfleet** has been named industry manager of the Marine Div. **Lee Stratton** has been appointed merchandise director of the Parts Div. **Sublette M. Walton** has been appointed industry manager of the Alumi-Drome Div.

SKF Industries, Inc. has appointed **Arthur S. Roberts** secretary and counsel, succeeding **Charles P. Collins**, who resigned from this post and that of general counsel. **Charles J. Reimer** has been appointed general purchasing agent, succeeding **J. F. Whelihan** who resigned.

Tyson Bearing Corp., Massillon, O., has appointed **George C. McMullen** vice president in charge of sales. **W. H. Oexle** has joined Tyson as general sales manager. **Herschel J. Deal**, vice president, has been placed in charge of the midwest territory and will make his headquarters in Chicago **Ivan C. Mann**, formerly manager of replacement sales, has been named assistant sales manager. **R. R. Flaisig** has been appointed Tyson representative in the southern Ohio territory, making his headquarters at the factory. **E. M. Smith** has been placed in charge of the northeastern territory with headquarters in Philadelphia. **Carl M. Behm** has become the Tyson representative in northern Ohio.

Worthington Pump and Machinery Corp., Harrison, N. J., has elected **Frank J. Whelan** a vice president. Mr. Whelan will be succeeded as manager of the Reciprocating Pump Div. by **Alvin F. Welsh**, now engineer in that division.

• • •

The National Industrial Conference Board, the independent and non-profit institution for research and education in the field of applied economics, has announced the election of **Calvert Carey**, as one of its new board members for the 1948-49 term. Mr. Carey is president of The Yale & Towne Manufacturing Co.

Niagara Frontier Industrial Traffic League has elected **Herbert F. Gareis** president. Mr. Gareis is manager of the Knowlton Warehouse in Buffalo. (Toles)

Southwest Warehouse & Transfermen's Assn. has selected **W. Scott Clark** as its new secretary-manager to fill the vacancy created by the recent resignation of **Amos Brooks.**

The Traffic Club of Philadelphia: has elected the following officers: president, **C. S. Rogers**, general agent, St. L. S. W. Railway Lines; first vice president, **Robert Maguire**, manager, Traffic Div., Atlantic Refining Co.; second vice president, **Fred H. Hicks**, asst. general agent, Jersey Central Lines; secretary, **E. L. Wink**, traffic manager, Bisbee Linseed Co.; treasurer, **William F. Diehl**, manager, Republic Carloading and Distributing Co. New directors are: **Craig Johnston**, eastern sales manager, Lifschultz Fast Freight; **Owen R. Jones**, supt. distribution and traffic, General Electric Co.; **John W. Hartzell**, general freight agent, B. & O. Railroad Co.; **James C. Walker**, branch manager, Roadway Express, Inc.; **Theo. R. Glick**, traffic manager, John T. Lewis & Bros. Co. Historian is **Lewis T. Cuthbert**, traffic manager, American-Franklin Olean Tile.

Warehousemen's Association of the Port of New York, Inc. has elected the following officers: **F. E. Bickel**, president; **Arthur Link**, vice president; **C. A. Roberts**, secretary; and **H. L. Fates**, treasurer. **F. T. Leahy** continues as executive vice president.

AIRCRAFT CONTAINERS

(*Continued from Page* 29)

vegetables, and other objects requiring a water-proof container. Another material which has gained increasing popularity since the war, when it was used for a great variety of purposes, is Tekwood, a veneer-kraft laminate that is chemically treated to make it water-resistant, manufactured by United States Plywood Corp.

Wirebound boxes, wooden crates and skids, bales, bags, and bundles find their own happily useful niches in air transportation, giving to a certain type of cargo a certain amount of protection and also affording such a degree of lightness that the cost factor is justifiably achieved.

Cargo dimensions, susceptibility to reduced pressure, waterproof qualities, are among other considerations that often are involved in the selection of a container for certain types of cargo.

Airlines take almost any type of cargo, with very definite exceptions. It is not, however, the purpose of this article to enter into cargo classifications, but to take samples of what is being done today to produce a real air cargo container.

Robert Gair Co., Inc., and The Mengel Co., along with other manufacturers of the corrugated and solid fibreboard containers are making strides to further perfect a type of container for certain types of cargo that has been useful since the birth of the air age.

United States Plywood Corp. has evolved a weldwood plywood air cargo container that presently is undergoing severe tests in foreign flights. The project was instigated by the major airlines and interest in the container has been shown by all cargo operators. The test container has been flown around the world. When not in use, it will collapse to a minimum volume. It can be erected in a matter of seconds, and was designed and patented by United States Plywood. Since it has not gone into production, officials of United States Plywood Corp. declined to give further information concerning it.

It is, however, a major step in the direction of an ideal air cargo container, one that is light, strong, and re-usable. United States Plywood also is evolving a container from its Honeycomb material, a honeycomb-like core bonded to either aluminum or wood veneer faces. The honeycomb container will be used for refrigeration and shipment by air.

Goodyear Tire & Rubber Co.'s Pliofilm has been adopted by Hinde & Dauch Paper Co. for use as an inner-lining envelope in its Insulpak, a container which has received wide acclaim for use in air transportation. The container is suited for shipments that can be pre-cooled and temperature maintained at a satisfactory level for upwards of 15 to 20 hours without use of refrigeration.

An ingenious container devised from Hinde & Dauch corrugated boxes and a hammock made of Pliofilm is one worked out by Spencer A. Larsen, director of business research at Wayne University, Detroit. It is called the "Hammock-Pak," and it is veritably that. A cargo of eggs, or other fragile objects, may be placed in a paper box or similar container, have a web of pliofilm spun around it, and then be suspended in the air, with the ends of the pliofilm hammock securely tied to the walls of the airplane cabin.

Ralph E. Myers, chairman of the air transport committee of the United Fresh Fruit and Vegetable Assn., of California, issued a report in which he challenged that there is much to be done in evolving packages for the air shipment of vegetables and fruits. ". . . Even produce experience does not provide a simple answer for the packaging and loading problems that air freight poses," says Myers, ". . . there is much yet to be discovered and accomplished in this field . . ."

The Addison-Semmes Corp. of Racine and Chicago, has evolved a low cost, light-weight, expendable pallet that is particularly suited to the loading of several packages at one time through use of a lift. It permits the fork of the lift to go underneath the stack of packages and does not necessitate the individual handling of packages themselves.

A great stride forward in the evolution of an ideal air cargo container for liquids, such as men's toiletries, perfume, liquid deodorants, etc., is the plastic polyethylene bottle developed by Plax Corp., Hartford, from polythene flake manufactured by E. I. du Pont de Nemours & Co. The container is characterized by such properties as its adaptability to a variety of fabricating processes, its flexibility and toughness over wide ranges of temperature, its chemical inertness, its low water-absorption and its low rate of transmission of water vapor. The polyethylene bottle is both light and strong, and is perhaps the most ideal yet devised for air transportation of liquids, toiletries, etc., that normally would be packaged in glass containers.

In summary, it might be wise to refer to a statement by K. W. Kruger, engineer, of the United States Dept. of Agriculture, Forest Service, Forest Products Laboratory. Kruger comments, "We feel that containers used for air shipment are often subjected to as many and as severe handlings as are domestic surface containers and for that reason we have recommended the same container requirements for both air and domestic surface shipments. However, the containers having the lowest tare weights are preferred for air shipments."

The examples of air cargo containers cited above have been selected at random, and are by no means exhaustive. Many individuals in industry and in private laboratories today are developing a great variety of containers that, for their particular applications, are just as ideal for use in air transportation.

Public Warehouse Section

Warehousing is an integral part of distribution in several ways. Public warehouses are not merely depositories for the safeguarding of personal effects or industrial commodities; many are equipped to perform a wide range of services in addition to storage. Among these services are:

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This special advertising section of public warehousing has been consolidated for ready reference and maximum utility. It includes merchandise, refrigerated, household goods and field warehouses. For shippers' convenience states, cities and firms have been arranged alphabetically.

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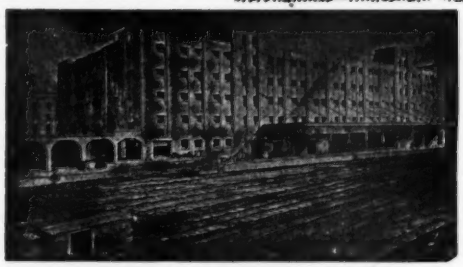

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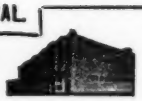

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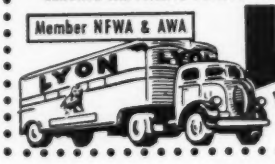

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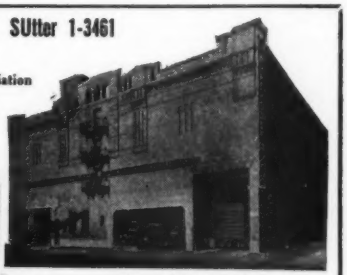

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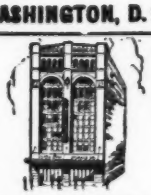

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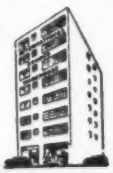

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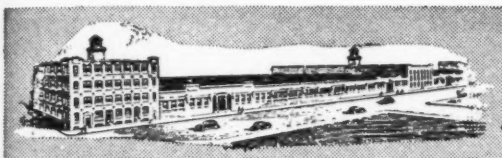

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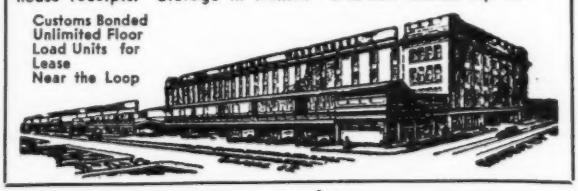

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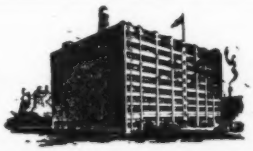

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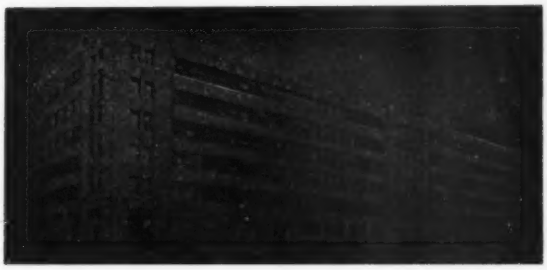

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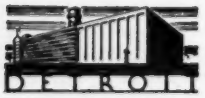

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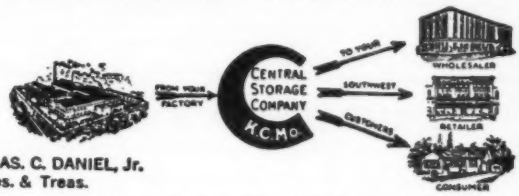

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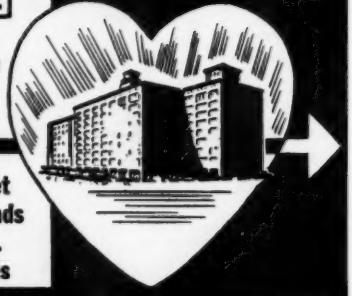

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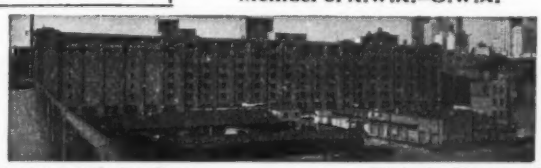

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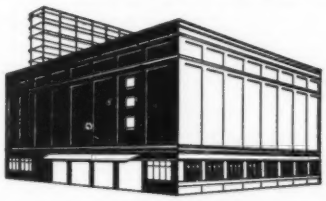

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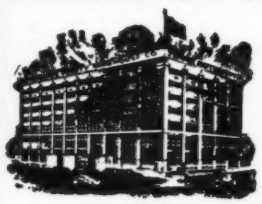

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Concrete floors, modern equipment.
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Merchandise Storage and Distribution
Over 1,000,000 cubic feet reenforced Concrete Sprinklered Space
Insurance Rate 11 Cents
CORNWALL WAREHOUSE CO.
353 W. 2d South St., Salt Lake City 1
Represented by
DISTRIBUTION SERVICE, INC.
New York-Chicago-San Francisco

SALT LAKE CITY, UTAH

Merchandise Storage—Pool Car Distribution
MOVING WITH CARE United VAN LINES INC. EVERYWHERE
KEYSER MOVING AND STORAGE CO.
328 West 2nd South, Salt Lake City 1
Established 1910
72,000 sq. ft. space. Reinforced concrete and brick Central location. Systematic delivery service. A. D. T automatic burglar and fire protection. Office and desk space. *Member-AWA-UVL-UWA-AWI*
ASSOCIATED WAREHOUSES INCORPORATED

SALT LAKE CITY, UTAH

"Serving the Intermountain West"
SECURITY STORAGE & COMMISSION CO. Inc.
230 So. 4th West St., Salt Lake City (1)
Warehousing-Distribution service since 1906
Represented by American Chain of Warehouses
New York (17) 250 Park Avenue — Chicago (4) 53 W. Jackson Blvd
Member of American Warehousemens Association

NORFOLK, VA.

MEMBER MAYFLOWER WAREHOUSEMEN'S ASSOCIATION
Household • Automobile Storage • Merchandise
NEW-BELL STORAGE CORPORATION
22nd St. & Monticello Ave.
NORFOLK 10, VIRGINIA
MODERN SPRINKLER EQUIPPED WAREHOUSE
50,000 SQUARE FEET PRIVATE RAIL SIDING
Lowest Insurance Rate in Norfolk. Pool Car Distribution
WE SPECIALIZE IN MERCHANDISE STORAGE AND DISTRIBUTION
AGENTS AERO MAYFLOWER TRANSIT COMPANY
Member M.W.A. & A.T.A.

NORFOLK, VA.

STORE and DISTRIBUTE
IN THE PROSPEROUS TIDEWATER AREA THRU PRUDENTIAL
HOUSEHOLD GOODS MOVED, PACKED, SHIPPED
POOL CAR TRANSFER TRUCKING SERVICE
LARGE FIREPROOF WAREHOUSE
OPEN YARD STORAGE AVAILABLE
LOCATED ON N. & W. SIDING
PRUDENTIAL STORAGE and WAREHOUSE COMPANY
Billings St. at N. & W. Ry.
P. O. Drawer 1859 — Telephone 22481 or 54008

NORFOLK, VA.

Fine Warehousing Since 1914

Security Storage and Van Co.

500-530 FRONT STREET

COLLECTIONS • POOL CARS • DISTRIBUTION

MOTOR VAN AND LIFT VAN SERVICE

Member—Nat'l. F.W.A.—Allied Van Lines

NORFOLK, VA. Established 1892

SOUTHGATE

STORAGE COMPANY, Inc.

239 Tazewell St., Norfolk 10

MEMBER: A.C.W. A.W.A. S.W.A. U.S.C. of C.

For economical storage and distribution you will want to know more about our individualized services. Our fireproof warehouses are in the Southgate Terminal, on the waterfront and in the center of Norfolk's wholesale district. Served by all rail, water and motor lines.

Write for Booklet—"7 POINT DISTRIBUTION"

RICHMOND, VA. 70 Years of Uninterrupted and Expert Service

BROOKS TRANSFER and STORAGE CO., Inc.

1224 W. Broad Street, Richmond 3, Va.

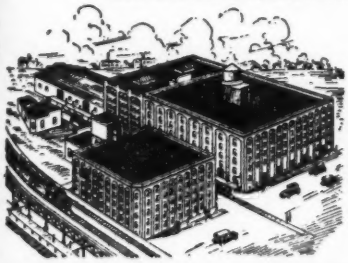
Three Fireproof Storage Warehouses—810,000 Cubic Feet Floor Space—Automatic Sprinkler System—Low Insurance Rates—Careful Attention to Storage—Packing and Shipping of Household Goods—Private Railroad Siding—Pool Car Distribution—Motor Van Service to All States—Freight Truck Line. Member of N. F. W. A. — A. T. A.

Agents: United Van Lines, Inc. serving 48 States and Canada.

RICHMOND, VA. *Established 1908*

VIRGINIA BONDED WAREHOUSE CORPORATION

1700 E. CARY ST., RICHMOND 3, VA.



160,000 SQ. FT. SPACE

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MERCHANDISE STORAGE & DISTRIBUTION

INSURANCE RATES 20c PER $100 PER YEAR

ROANOKE, VA.

H. L. LAWSON & SON

Finance and Storage

Pool Car Distributors

General Merchandise Storage

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ROANOKE 7, VIRGINIA

Represented by

Associated Warehouses, Inc., Chicago and New York

ROANOKE, VA.

ROANOKE PUBLIC WAREHOUSE

369 W. Salem Ave., W., Roanoke 5

Capacity 500 Cars — Automatic Sprinkler

Private Railroad Siding — Accurate Accounting

We make a specialty of Storage and Pool Car Distribution for Agents, Brokers and General Merchandise Houses.

Member of American Chain of Warehouses

SEATTLE, WASH.

EYRES TRANSFER & WAREHOUSE CO.

2203 First Ave., So., Seattle 4

Cartage — Distribution — Storage

Highest financial rating; new fireproof; A.D.T. sprinklered buildings; lowest insurance rate (10.2c); modern equipment.

SEATTLE, WASH.

LLOYD

Transfer Co. Inc.

POOL CAR DISTRIBUTION

MACHINERY MOVING, RIGGING AND HAULING

U. S. Custom Bonded

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OLYMPIC WAREHOUSE & COLD STORAGE CO.

MERCHANDISE STORAGE & DISTRIBUTION

1203 Western Avenue — Seattle 1, Wash.

Cold Storage—Dry Storage—Rentals—Pool Car Distribution—Office Rentals Fireproof, brick const.; Sprinkler system; Insurance rate: 12.8c. Siding connects with all rail lines.

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Member of A.W.A. (C.S.) Wash. State Whsmns. Assn.

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MEMBER WAREHOUSEMEN'S ASSOCIATION

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CULBERTSON — Seattle's Exclusive Furniture Repository

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Executive Offices: 1017 E. 40th St., Seattle 8

R. G. Culbertson, President — Wm. T. Laube, Jr., Secretary

SEATTLE, WASH. Lloyd X. Coder, Pres. Ellis L. Coder, Secy.-Treas.

SYSTEM Transfer & Storage Co.

Established 1919

2601-11 Second Avenue, Seattle 1

Complete Drayage, Storage and Distribution Service

"System Service Satisfies"

Member—A.W.A.—W.S.W.A.—S.T.O.A.

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WAREHOUSING • DISTRIBUTION • TRUCKING

Represented By

DISTRIBUTION SERVICE, INC.

New York—Chicago—San Francisco

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Specialize in serving food and related industries; pool car distribution; 44 trucks and tractors with semi-trailers. New 90,000 ft. modern warehouse, equipped with forklift tractors.

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WAREHOUSING • DISTRIBUTION • TRUCKING

Represented By

DISTRIBUTION SERVICE, INC.

New York—Chicago—San Francisco

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WAREHOUSE & TRANSFER CO., INC.
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WAREHOUSING • DISTRIBUTION • TRUCKING
Represented By
DISTRIBUTION SERVICE, INC.
New York—Chicago—San Francisco

HUNTINGTON, W. VA.

Every facility for you and your patrons' convenience to secure your share of this Five Hundred Million Dollar market is available through
THE W. J. MAIER STORAGE COMPANY
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STORAGE — WAREHOUSING
MERCHANDISE and HOUSEHOLD GOODS
Pool Car Distribution within 100 Miles of Appleton
Long Distance Moving Coast to Coast Service
Packing, Cartage, Heavy hauling of Machinery a Specialt
Harry H. Long • Moving & Storage
115 S. Walnut St., Appleton, Wis. Phone 6300

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LEICHT TRANSFER & STORAGE CO.
123 SO. BROADWAY • GREEN BAY • WIS.
New York Office:
Interlake Terminals, Inc.
271 Madison Ave. (16)
Marinette Office:
1720 Pierce St.
Marinette, Wis.
Merchandise Storage
Pool Car Distribution
Transit Storage
Household Goods Storage
Heated—Unheated—Yard Storage
Waterfront Facilities
Stevedore Services
U. S. Customs, State and Public Bonded
40 Car Track Capacity
Modern Handling Equipment
Private Siding on C&NW, CMStP&P, GB&W Lines
Reciprocal Switching all lines
Complete local and over-the-road truck services with 18 units of all types of equipment, including low-bed trailers, winches and cranes.
Agent-Mayflower moving and storage
Inquiries invited

R. M. Coburn, marketing consultant, concludes the outline of his compensation plan for salesmen in the next issue of DISTRIBUTION AGE.

RATE FOG

(*Continued from Page 89*)

certificates or permits in whole or in part, once they have become effective and the time fixed for requesting rehearing or reconsideration has passed. A number of certificates and permits are outstanding which are not being used in whole or in part. Probably in many of such instances the nonuse is not willful but due to conditions which may reasonably be regarded as beyond the control of the holders. Changes in economic conditions since the beginning of the war have materially affected the operations of many water carriers and their ability to provide service. How long these conditions may continue cannot be foreseen. There are instances in which applications are pending for authority to institute new operations between ports which carriers not now in operation are authorized to serve. The existence of unused authorities which the Commission apparently is without power to revoke makes it difficult to determine to what extent duplicating new authorities should be granted in view of the danger of an eventual surplus of competitive service which might be injurious to the carriers and the public in general. We believe that water carriers should have reasonable protection against loss of their operating rights where abnormal or special conditions have hindered resumption or continuance of operations. However, we do not believe it to be in the public interest that certificates and permits be wholly beyond administrative scrutiny and control. Accordingly, consideration should be given to the desirability of amending part III of the act by adding thereto revocation provisions similar in substance to those in section 212(a) of part II and section 410(f) of part IV."

This may be the cue for the short-haul lines to get back into the swing at the time of the commission's final determinations in the pending petitions of the carriers before the ICC for additional increases in their rates.

COMPENSATION

(*Continued from Page 72*)

tions, especially when there are extreme variations. There is a method available to progressive firms which easily fulfills these requirements. Before describing it, it might be well to ask and answer a question.

Note: The Editor regrets that space limitations make it impossible to publish more than the introduction to Mr. Coburn's compensation plan for salesmen in this issue. The plan itself will be discussed in a second, and final, installment to appear next month. Readers are urged to retain this first installment and consider it in relation to the second in order to preserve the continuity of Mr. Coburn's argument.

Packaging Show

More than 200 exhibitors are scheduled for the 17th Annual AMA Packaging Exposition and concurrent Conference, to be held at the Cleveland Public Auditorium, April 26-30. These firms will show the latest developments in packaging techniques and materials in exhibits that will cover more than 100,000 sq. ft. of floor space and will last five days, the additional day having been requested by exhibitors because of the huge attendance at the Philadelphia show last year.

The slogan of this year's show is: "Proper packaging protects the product and the purchaser."

MADISON, WIS.

LOW INSURANCE RATE

CENTRAL
STORAGE AND WAREHOUSE COMPANY

COLD STORAGE
DRY STORAGE
FREEZER STORAGE

612 W. Main St., Madison 3

MILWAUKEE, WIS.

Service Minded

"Store American" For Economical Efficient Experienced Complete Merchandise Warehousing

SPECIALISTS IN POOL CAR DISTRIBUTION

AMERICAN WAREHOUSE CO.

General Office 525 East Chicago St. | Milw. Whse. Ass'n | Wis. Whse. Ass'n | *House No. 2* 302 North Jackson St.

Private Siding—Chicago & North Western Ry. 3rd Ward District

MILWAUKEE, WIS.

MILWAUKEE'S *only* COMPLETELY PALLETIZED WAREHOUSE

• Over 1½ Million Cubic Feet First Floor Space •

ATLAS STORAGE

DIVISION OF P&V-ATLAS INDUSTRIAL CENTER INC.
647 W. VIRGINIA ST. MILWAUKEE 1, WIS.

HANSEN STORAGE CO.

126 N. JEFFERSON ST., MILWAUKEE 2, WISCONSIN
Wisconsin's Largest Warehouse

STORAGE SPACE
POOL CAR DISTRIBUTION
CUSTOMS BONDED SPACE
BOAT DOCKAGE
STEVEDORING
MOTOR TRUCK SERVICE

Since 1904 we have served the Jobbing Trade.

Representatives:
AMERICAN CHAIN OF WAREHOUSES
Chicago: Tel. Harrison 3688 - New York: Tel. Plaza 1234
INTERLAKE TERMINALS, INCORPORATED
New York .....Tel. Murray Hill 8-6397

MILWAUKEE, WIS.

LINCOLN
WAREHOUSE COMPANY

MERCHANDISE WAREHOUSING AND DISTRIBUTION
LOCATED IN HEART OF BUSINESS DISTRICT
Offices: 206 W. Highland Ave., Milwaukee 3
Member of A.W.A.—W.W.A.—M.W.A.

MILWAUKEE, WIS.

NATIONAL TERMINALS CORPORATION

954 So. Water Street, Milwaukee 4 Tel. Mitchell 5644

Milwaukee's most modern and best located Waterfront Warehouse. Automobile storage. Warehousing on unit basis for spot stocks. Storage "in transit". Pool car distribution. Customs Bonded.
Member of A. W. A. & W. W. A
New York Office: 122 E. 42nd St., Phone Murray Hill 5-5960, New York 17, N. Y

MILWAUKEE, WIS.

"Milwaukee's Finest"

National Warehouse Corporation

— STATE BONDED —

EVERY CONCEIVABLE WAREHOUSE & DISTRIBUTION SERVICE AFFORDED

Fides et Fidelis
ASSOCIATED WAREHOUSES INCORPORATED

A.D.T. Service
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Milwaukee 4
C. & N.W.R.R. Siding

MILWAUKEE, WIS.

—Phone Marquette 7091

TERMINAL STORAGE CO.

100-112 W. Seeboth St.
Milwaukee 4, Wisconsin

Cooler, Freezer and General Merchandising Storage
Deep Water Dock, Private Siding
on C.M.St.P. & P. R.R.

SHEBOYGAN, WIS.

MEMBER MAYFLOWER WAREHOUSEMEN'S ASSOCIATION

SHEBOYGAN
WAREHOUSE & FORWARDING CO.

A Merchants & Manufacturers Warehouse

11th and Illinois Ave. Sheboygan, Wis.
Member of A.W.A.—May. W.A.—Wis. W.A.

CANADA

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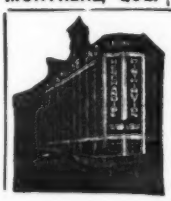
M. A. RAWLINSON, Pres. & Gen. Mgr.

M. RAWLINSON, Ltd.

Established 1885 610 Yonge St., Toronto 5, Can.

Seven Buildings to Meet All Requirements for Modern Storage and Distribution
Customs Bonded. Pool Car Distribution. Household Goods Moved, Packed, Shipped and Stored.
Members of CanWA—NFWA—BAIFR—FWRA—TC&W—ALLIED VAN LINES

MONTREAL, QUE.



ST. LAWRENCE WAREHOUSE INC.

3-VAN HORNE AVENUE, MONTREAL, CANADA

200,000 SQ. FT. OF MODERN FIREPROOF SPACE LOCATED IN THE EXACT CENTER OF THE CITY OF MONTREAL
Canadian Customs Bond. Private Siding—8 Car Capacity—Free Switching—All Railroad Connections
New York Representative: Frank J. Tully
277 Broadway, New York 7 Phone Worth 2-8428

MONTREAL, QUEBEC

Established 1908
W. G. KENWOOD, Pres. & Man. Dir

Westmount Transfer & Storage Ltd.

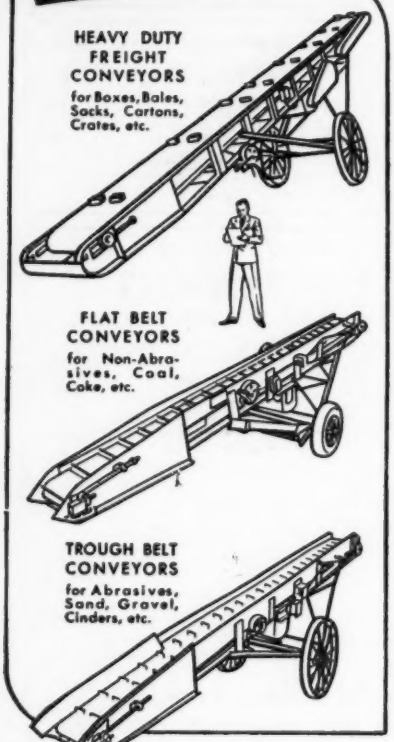
205 Olivier Ave., Westmount, P. Q.

LOCAL AND LONG DISTANCE MOVERS
Private Room System for Storage
CRATING, PACKING and SHIPPING
Charges Collected and Promptly Remitted
Member: N F W A., Can. W A

CANADIAN WAREHOUSEMEN'S ASSOCIATION OFFICIAL SEAL CWA

Cut down your handling costs!

TROWBRIDGE PORTABLE CONVEYORS


HEAVY DUTY FREIGHT CONVEYORS
for Boxes, Bales, Sacks, Cartons, Crates, etc.
FLAT BELT CONVEYORS
for Non-Abrasives, Coal, Coke, etc.
TROUGH BELT CONVEYORS
for Abrasives, Sand, Gravel, Cinders, etc.

For fast handling of freight—in any size or shape—at terminals, piers or warehouses, TROWBRIDGE heavy duty freight conveyors can save you money on every ton handled. Available for prompt shipment with gas or electric power. Portable conveyors have been manufactured by TROWBRIDGE for more than 25 years and are sold and serviced nationally by over 200 trained representatives. Write for descriptive literature today; no obligation.

MAKES LIGHT WORK OF HEAVY LOADS!

TROWBRIDGE CONVEYOR COMPANY

835 VAN HOUTEN AVE., CLIFTON, N. J.

Affiliate of MEMCO-Mfrs. of Magnetic Separators

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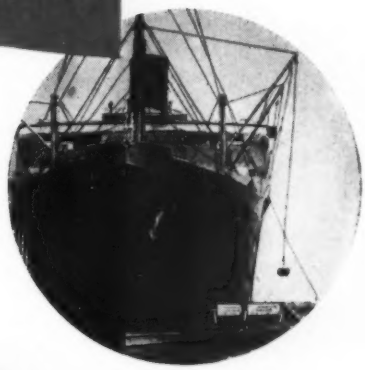


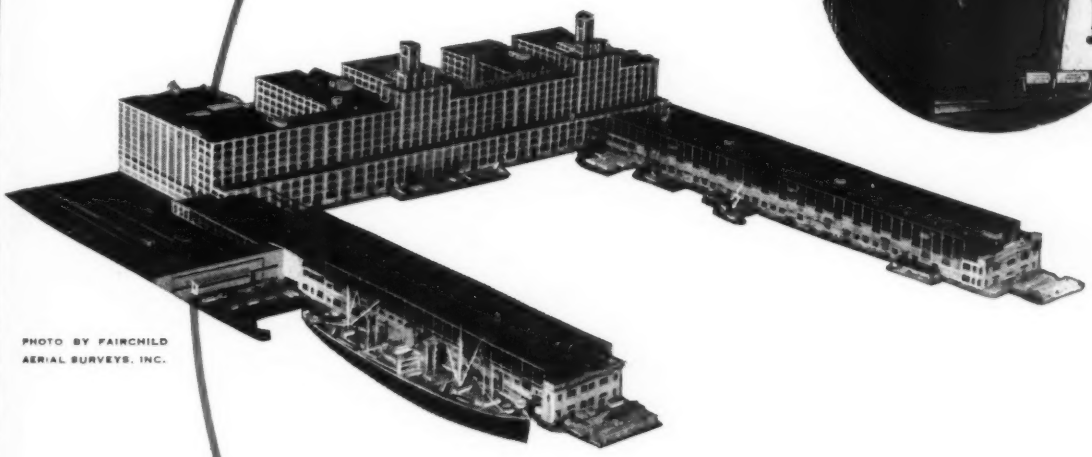


PHOTO BY FAIRCHILD AERIAL SURVEYS, INC.

Billions of the nation's exports flow through the Port of New York. A part of them is cleared from Harborside . . . the world's greatest rail-water terminal.

Fantastic quantities of the varied products needed to put the world on its feet arrive at Harborside by rail, highway, and water—then are transshipped to markets in every sector of the globe. Harborside has justly earned the title "Gateway to the World."

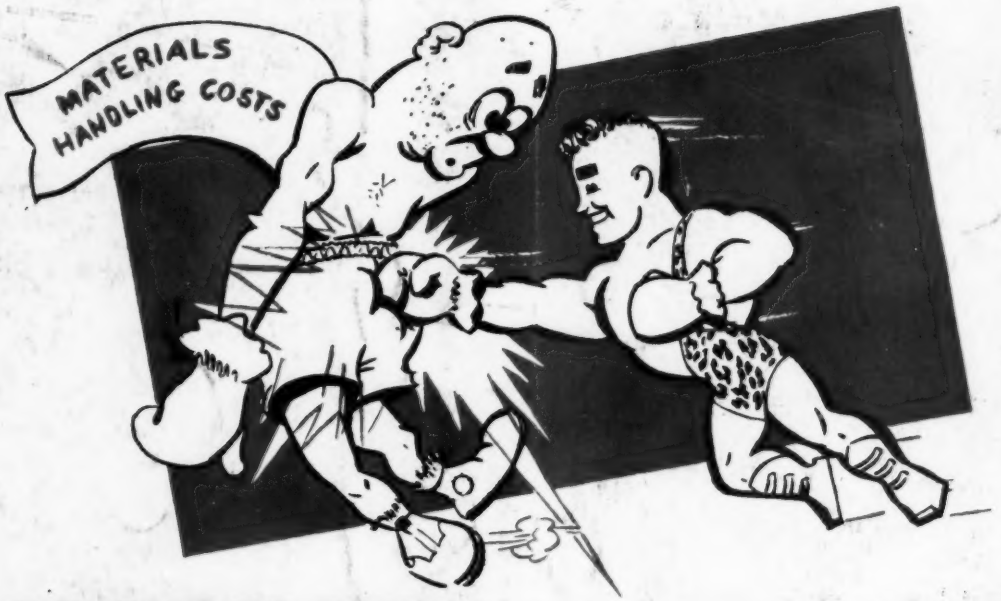
Here under one vast roof is safe storage space for all manner of commodities entering into domestic and foreign commerce . . . some 4,000,000 cubic feet of expertly engineered and competently managed cold-storage space as well. Personnel are highly skilled, and operations are mechanized to the peak of modern efficiency. Harborside can render you prompt, safe, economical distributional service, whether your activities are local, regional, or world-wide in scope. Write for folder giving complete information about Harborside's varied facilities and services.

Harborside is located directly opposite Cortlandt Street, Manhattan. Direct connections with all railroads and with steamships, via lighterage. 26-car placement. Five minutes to Holland Tunnel and trunk highways.

"Gateway to the World"

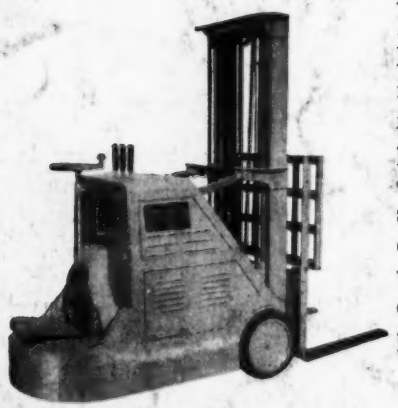
HARBORSIDE

WAREHOUSE COMPANY, INC. • 34 EXCHANGE PLACE, JERSEY CITY 3, N. J.



MOBILIFT *"The Mighty Midget"*

A Cost Cutter with a Punch!



It's a tough battle, this constant fight to keep production costs down. Shortages keep material costs up. Labor costs are high and steadily increasing. Taxes are as high as ever.

But there is one logical way out—and that is in handling materials. Handling costs are no match for Mobilift—affectionately known as "The Mighty Midget" by thousands of users. Mobilift, because of its size, its ease of handling and its all around operating speed has many economies. It makes more trips per hour—moves more tonnage per day than any other fork lift truck on the market. It saves time, space and human energy. It cuts handling costs in every department from the loading platform to the warehouse. Put the Mighty Midget to work cutting costs in your plant or warehouse. Send for our 16-page illustrated folder on modern Mobilift operation.

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835 S.E. Main St., Portland 14, Oregon

Please send me your illustrated folder on Mobilift operation.

Name_____

Firm_____

Address_____

City_____ State_____

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"The MIGHTY MIDGET"

SALES OFFICES
IN MAJOR CITIES